COMPUTERWORLD

INSIDE

In Depth — Putting form before function. Page 65.

Borland and MSA both to cut jobs in effort to bring profits back into picture. Pages 4 and 6.

Back in court,

Computer Associates seeks monetary damages from Altai in trade-secret theft suit. Page 14.

Oracle states its CASE with product array for Sun systems. Page 8.

Starlan 10M-bit network version links 1,000 PCs at Chicago law firm. Page 51.

Tale of two PC policies:

Audio-products firm has systems on more than 70% of executives' desks, while conservative entertainment and soft-drink conglomerate finds itself at the bottom of the integration scale. Page 39.

Microsoft carves up organization with picture that has a familiar Blue hue. Page 4.

Swapping technology used to be sufficient; now, hardware and software vendors are swapping technologists in an effort to get products more quickly into

customers' hands. Page 83.

CDC's service bid receives cool reception from IBM 3090 users. Page 10.

Sparcs flying over RISCy turf

TI, Matsushita follow Sun, but big challenges loom on horizon

BY NELL MARGOLIS

Sun Microsystems, Inc. took a giant step toward its coveted role as standards maker to the workstation universe last week as mighty companies at home and abroad embraced its Sparc

However, despite the addition of Texas Instruments, Inc. and Japanese leader Matsushita Electric Industrial Co. to the Sun bandwagon, analysts cautioned that it is still far too early to cash

Horse race

Sun Microsystems

Apollo Computer

in the chips for companies betting on microprocessors other than Sun's

Sun and AT&T, the firm's development partner and owner of 20% of Sun stock, want to establish Sun's Scalable Processor Architecture - the Sun implementation of the reduced instruction set computing technology that looms ever larger in the booming high-power workstation market as a de facto standard workstation architecture.

Their success is far from ensured. Some of the premier

25.6%

27.9%

20.1%

names in the industry are pinning substantial hopes on architectures other than Sparc.

Digital Equipment Corp., for example - which by some accounts has already passed Apollo Computer, Inc. in workstation market share - is racing to catch up with market leader Sun. DEC is reportedly basing its effort largely on an emergent workstation line that will feature a non-Sparc RISC chip from Sunnyvale, Calif.-based Mips Computer Systems, Inc.

Hoping for a comeback

The currently troubled Apollo is hoping to score a comeback with its recently announced RISCbased DN10000 superworkstation line.

And waiting in the wings is IBM. That firm's RISC-based RT — still a machine looking for a market, according to several analysts - nevertheless could "create fear and loathing in the workstation market" within the coming year if the company successfully realizes its recently affirmed dedication to making the RT a contender, said Charles Foundyller, president of Dara-

Continued on page 109

Unisys set to replace 1100 line

BY JEAN S. BOZMAN

Unisys Corp. is planning to announce a high-end replacement for its largest model 1100 mainframes later this month, according to several of its customers and industry analysts. The new mainframes, reportedly called the 2200/600 series, will run 1100 software with little or no

"We are expecting a major announcement sometime between now and our user conference meeting in October," said Jim Ault, president of Use, Inc., an organization of Sperry system

Unisvs would not directly comment on the anticipated 2200 mainframes, which would extend the reach of the 2200 line introduced in March [CW, March 21]. "It's fair to say we're looking forward to a very significant announcement in the near future," Unisys spokesman Wayne Adams said.

Continued on page 8

Percent market share by unit shipments

DEC 11.2% 19.2% Hewlett-Packard 15.7% Silicon Graphics 1.9% 2.2% IBM 2.4% 15.7% Other 10.9% 11.8%

Sun has moved into the top spot among workstation vendors, but DEC is closing in rapidly

SOURCE: DATAQUEST, INC

COMPUTERWORLD SALARY SURVEY

For MIS, the big payoff is in utilities

BY DAVID A. LUDLUM

While "plastics" was the word of advice given Benjamin Braddock in the 1967 film The Graduate, "utilities" might be the catchword for the pursuit of material rewards in MIS.

In the world of corporate MIS, managers and professionals plugged into the utilities in-

Inside

 Detailed charts appear on pages 74-78.

332

dustry make the most money. according to the second annual Computerworld/Data Processing Management Association salary survey. Those in retail and wholesale trades, on the other hand, work at discount rates.

Such variations reflect in part different attitudes toward inforsystems, consultants said. MIS salaries tend to be high in industries in which data processing is part of the integral structure of companies, says M. Victor Janulaitis, president of Positive Support Review, Inc. in Los Angeles. "Typically, in utilities, DP is an integral part of the process," he says

In the retail trade, on the other hand, many companies have only recently stressed information systems, and others have yet to do so, says Paul Berger at PBC, Inc. in Lawrenceville, N.J. Berger is also president of the Society for Information Manage-

The survey also found that a larger employer means a heftier paycheck. The variations in pay among companies of different sizes can range up to 60% for top managers but tend to be much slimmer for professionals such as programmers and systems ana-

lysts (see story page 76).

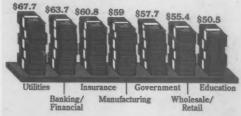
When it comes to regions, the ones in which salaries run high - New York, San Francisco and Los Angeles - also have lofty costs of living; comparing salaries with respondents' satisfaction with their pay provides some perspective on these varia-

Of the MIS directors and oth-Continued on page 74

Where the money is

Average salaries of MIS directors in seven pertical industries reflect the variations for most MIS position

AVERAGE SALARY IN THOUSANDS



CW CHART

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MI 48186

UNIV MICROFILMS INTERNATL

IN THIS ISSUE

Sharper TAC. Lotus' latest release sports speedier CPU access time, easier entry to host-based data and Blueprint compatibility.

CASE connoisseur. Oracle spears piece of CASE pie with threepronged product line that will run on Sun, HP and VAX workstations. Page 8.

NEWS

- 4 Overzealous attack may be responsible for Borland's business woes
- 4 To manage growth, Microsoft cleaves applications division into five business
- 5 You won't have Gould to kick around anymore, as Japanese firm buys controlling
- 5 HP cashes in its chips and rolls out its most powerful desktop model.
- 6 "Top-heavy" MSA lightens up by 9% of work force.
- 6 Unix is currying more DEC development dollars than VMS
- 8 Most corporate information centers in no hurry to migrate to OS/2, study says.
- 10 Owners of 3090s are not eager to turn them over to CDC servicers.
- 10 Boston to buy IBM mainframe despite South Af-
- 14 CA tries to keelhaul another alleged source-code pi-
- 14 Japan has gotten jump on U.S. in photonics market.
- 15 Allied vendors supply LAN-to-LAN ISDN applica-
- 15 Nynex teams with Tandem to offer fault-tolerant OLTP equipment.
- 109 New Intel PC board provides multitasking support and expanded memory.
- 109 Informix is sending BLOB after Unix-based software vendors and users.
- 109 Novell's emphasis on software development pays off.

SYSTEMS & SOFTWARE

- 23 Preachers of CASE continue to outnumber prac-
- 23 Pick gets lift from PCs but still needs a tweak or two to compete with DOS, OS/2,
- 23 Users say McCormack & Dodge provides information access shortcut.



There's light at the end of the Design tunnel. Page 65.

MICROCOMPUTING

- 39 Rowdy rodent: Microsoft saves Word users from wild-mouse attacks.
- 39 General Cinemas and Bose approach PC position from different directions.

NETWORKING

- 51 EDI helps government cut down on paperwork.
- 51 Product rollouts augment LAN management mar-
- 51 Law firm first to install speedy Starlan.

MANAGEMENT

- 73 DP veteran Davis wants to turn page of MIS history book.
- 73 Two Honeywell Bull users groups will join forces

Quotable

"III his time around, they may find it harder to stay profitable. It's harder to get a destroyer to turn on a dime than a tugboat."

ROBERT KATZIVE

On Seagate Technology. See story page 83.

COMPUTER INDUSTRY

- 83 Seagate drives on skids as CPU makers start using more in-house peripherals.
- 83 Olivetti's fortunes may be looking up as vendor gears up for European attack.
- 83 Engineer cross-pollination promotes equipment compatibility.
- 83 IBM West Germany moves out discounted PC ATs to make room for

COMPUTER CAREERS

92 Jobless MIS managers can join the growing temp squad.

TRENDS

110 ANSI and ASCII text terminal volume up, cost down

IN DEPTH

65 Try a design-first strategy in developing systems. By Fred L. Forman and Milton S. Hess.

OPINION &

- 19 Grayson proofreads the documentation process.
- 23 O'Flaherty finishes report on IBM software strate-
- 39 Alexander deplores the state of the MIS managerend user relationship.
- 51 Passmore proposes combining SNA and X.25 networking standards.
- 73 Gilliam gives computer science education the busi-
- 83 Zachmann fears autumn means fall for computer industry fortunes.

DEPARTMENTS

- 6 News Shorts
- 18 Editorial
- 78 Calendar
- 102 Marketplace
- 108 Stocks
- 110 Inside Lines

Computer-matching bill would protect privacy

BY MITCH BETTS

WASHINGTON, D.C. - The U.S. Congress is on the verge of passing a privacy bill that would regulate the way federal agencies cross-check personal data under computer-matching pro-

The Computer Matching and Privacy Protection Act of 1988 is headed for final passage sometime this month, before Congress adjourns for election campaigning, according to congressional aide.

Computer matching, a controversial technique in use for more than a decade, is the comparison of two databases to determine whether someone is eligible for a federal benefit program. For example, tax records are used to track down welfare cheaters.

Robert Ellis Smith, publisher of the "Privacy Journal" news letter here, said he expects the bill's procedural changes to slow the pace of computer matching and offer improved protection for the individual.

Federal investigators increasingly use computer matching to detect errors and fraud in federal welfare programs, but critics have charged that it violates personal privacy and can be abused, according to a report by the U.S. House of Representatives' Committee on Government Operations.

The bill takes a middle ground by allowing computer matches to continue but establishing procedural safeguards to protect individual rights, the bill's spon-

For example, the bill stipulates that initial matches identified by the computer-matching program, also known as raw hits. must be independently verified before someone can be knocked off the welfare rolls. Individuals must be given notice, and an opportunity must be granted to contest the results of a computer match, because it could be based on faulty data.

Data integrity board A major provision requires each agency to create a data integrity board, which will review and approve computer-matching programs. Agencies must submit matching agreements" specifying the reasons, expected savings, procedures and privacy protections in the program.

The House passed its version of the bill, written by Rep. Glenn English (D-Okla.), in August. The Senate is expected to pass the House bill this month, perhaps with a few minor amendments, a congressional aide said.

The Senate passed an earlier version of the bill in May 1987 after a study showed that the number of federal computermatching programs tripled from 1980 to 1984 and faced little oversight by the executive branch.

The Congressional Budget Office estimated that the House bill will cost up to \$2 million in the first year and less than \$1 million annually thereafter.

Give us a (tax) break!

ACM chief campaigns for Section 1706 change

NEW YORK — The president of the Association for Computing Machinery (ACM) is urging the group's 75,000 members to stand behind an effort to ease requirements for computer consultants to qualify for Section 1706 tax breaks allowed to independent contractors.

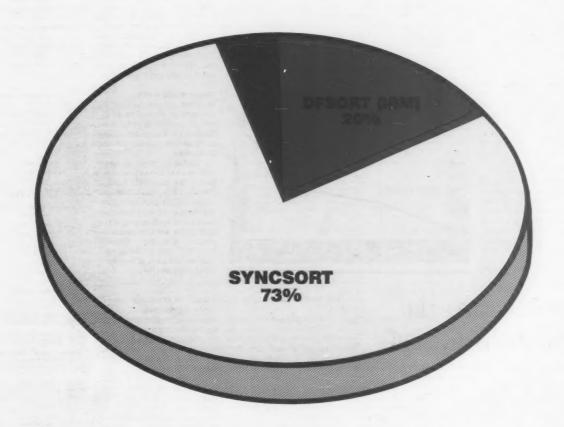
Bryan S. Kocher said last week that he will use an open letter scheduled to be published in the ACM's "Communications" publication next month to ask members to write to their U.S. senators and representatives. The letter urges members to back a proposal by Sen. Daniel P. Moynihan (D-N.Y.) for a twopart test to determine whether a consultant is an Independent contractor or an employee of a labor broker.

Kocher, who estimated that: 10% to 15% of the ACM's members are affected by Section 1706 provisions of the 1986 tax reform bill, claimed that Section 1706 unfairly singles out a handful of technical specialties, primarily to the benefit of labor brokers. He stated that the ACM as an organization has taken no stand on the Section 1706 controversy and noted that he personally is an employee of a company rather than an independent contractor.

In his open letter. Kocher says, "Section 1706 is unfair because it singled out just a few types of technical specialists for discriminatory treatment. Contractors in specialties not named in 1706 escaped all the problems associated with it. Section 1706 was, apparently, pushed into law by a small band of labor brokers who were interested only in transferring money from my friends' paychecks to their bottom line. HIN ARBOR

SYNCSORT vs. DFSORT

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Source: International Data Corp.

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Borland hits harsh realities

Firm to lay off 90 after losing quarter; some ask, was growth too rapid?

BY STEPHEN JONES

SCOTTS VALLEY, Calif.-Borland International may have just gotten too far ahead of itself. Its zealous attack on the software industry's biggest players through key acquisitions and a rebel-like mentality has resulted in a lot of glitz but little profit for the company.

Borland management last week moved to steer the company away from disappointing fiscal results by cutting about 90 sales and marketing employees. Borland said it expects to post a loss for the quarter ending Sept. 30, due in part to staff changes

The idea of the plan is to squeeze more profits out of software revenue by cutting costs and revamping the company's approach to corporate America, in which prices for Borland's traditionally low-cost products can be jacked up.

Borland hired two managers Lotus Development Corp. execwas appointed director of business development.

Borland's low profits are in part the result of skyrocketing expenses and the purchase of Ansa Software Co. last year for about \$16 million.

Earnings on the company's stock - which is carried on the London Unlisted Securities Market - have been flat for the last five quarters.

Some analysts expressed surprise over the job cuts and the dim prospects for a quarterly profit. Borland has taken a certain amount of pride in its rapid growth and quest for market share in such critical business

Time for a breather?

markets as spreadsheets and da-

"For a company that's supposed to be going gangbusters, that's a significant cut in staff — it seems very sudden," said Bill Higgs, director of software research at Cupertino, Calif.-based Infocorp.

Other industry watchers denied that Borland has bitten off more than it can chew.

Michael Murphy, editor of e "California Technology the "California Technology Stock Letter," said the moves are in line with Borland's goal to clean up its balance sheet and boost profits in order to make a secondary offering on the U.S. National Association of Securities Dealers Automated Quotations market.

'This ought to help them grow their revenues and get some of that money down to the bottom line," Murphy said.

Borland executives were not available for comment.

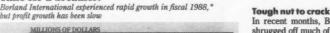
Borland has fared relatively well in early clashes with such industry leaders as Microsoft Corp. and Ashton-Tate Corp. David Bayer, a software analyst at Montgomery Securities in San Francisco, estimated that Borland is selling one of its Quattro spreadsheets for every 10 of Lotus Development Corp.'s 1-2-3 that is sold.

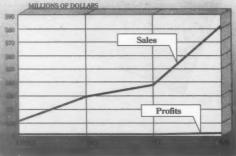
But the company has had to pay a price for its entry into certain markets. The onetime mailorder software company locked itself into selling low-cost products that are bought in high volumes but post very low margins.

In recent months. Borland has shrugged off much of its old image and targeted more lucrative Fortune 1,000 sites, but gaining entry into that sphere has not been easy.

"Customers aren't going to walk away in droves from comnanies like Microsoft, Ashton-Tate and Lotus," Bayer said.

Borland's trims include a reorganization of the marketing department, restructuring of the sales group and increased support of OEM sales. Analysts speculated that the dealer network Borland adopted from Ansa will be a target of the cuts.





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and product introductions.

It's a raid!

from its biggest competitors to spearhead the effort. Former utive Stephen Kahn, no relation to Borland President Philippe Kahn, was named vice-president of marketing. Stephen Green formerly manager of one of Microsoft Corp.'s OEM groups,

Microsoft carves up applications division

BY STEPHEN JONES

REDMOND, Wash. - Microsoft Corp. tore a page out of IBM's software management manual last week, carving its burgeoning applications division into five business units designed to manage the company's skyrocketing growth.

The changes closely follow the recent arrival of Mike Maples, a former director of IBM's software strategy, who has grabbed control of Microsoft applications development and marketing with both hands.

Analysts said the most notable shift in duties resulting from the restructuring is the apparent demotion of Jeff Raikes, who had previously wielded power as director of applications marketing. Raikes will act as general manager of the new Office Business Unit, which includes such products as Microsoft Word and Microsoft Mail

Raikes lost control over many

products, including Microsoft's Excel spreadsheet, one of the company's hottest programs and a major application in its OS/2 strategy. Pete Higgins, who had been group manager of spreadsheets, will have responsibility for Excel as general manager of the Analysis Business Unit.

In the last three years, Microsoft's applications development has mushroomed, and analysts have warned that management changes were needed to handle a new thrust into the OS/2 Presentation Manager products.

Margins in question

Applications raked in about \$235 million of Microsoft's \$590 million revenue total for last year, but investment analysts expressed concern that profit margins from the applications area were low in the company's recent financial statement.

Microsoft President Jon Shirley said Maples' position had been open for several months and that Raikes would actually

have more responsibility in his new job.

The reorganization is similar to IBM's longtime attempt to break development efforts into streamlined business units that are easier to manage and that foster more innovation and fewer crossed signals among managers. Maples recently announced another similar IBM approach: not discussing a new product until it is ready to ship.

They certainly have cloned IBM's structure to a certain extent." said Robert Therrien, an analyst at Paine Webber, Inc. in New York.

Shirley downplayed the impact of Maples' IBM background on the plan but said that "it was obvious that something needed to change" when Maples was

Microsoft is the most recent

in a number of software companies trying to manage the transition from a gee-whiz start-up to a consolidated corporation. Lotus Development Corp. last spring hired another seasoned IBMer. Frank King, to head up its product development.

The other business divisions include the following:

• Data Access Business Unit, which includes Microsoft File and Quick Basic. The programming language has been dropped under the applications umbrella in an attempt to broaden its use with certain applications.

 Graphics Business Unit, which will focus on products such as Powerpoint presentation graphics software.

· Entry Business Unit, which is responsible for the Microsoft Works integrated package and Flight Simulator.

CORRECTIONS

Covia Corp. [CW, Aug. 22] is a subsidiary of United Airlines.

Richard Miller, NEC Information Systems, Inc.'s director of entry systems marketing, was incorrectly identified as Compaq Computer Corp.'s director of entry systems marketing [CW, Aug. 29].

An Inside Lines item on Tandem Computers, Inc. [CW, Aug. 29] should have said that former Tandem executive Dennis Mc-Evoy - not President Jimmy Treybig - took a sabbatical in Senior Writers Nell Margolis Alan J. Ryan

Stuff Writer James Daly

Products Write Sally Cusack

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Failing Gould comes under Nippon's care

BY JEAN S. BOZMAN

ROLLING MEADOWS, Ill. — In recent years, Gould, Inc.'s businesses have unraveled like a ball of yarn. And last week, what remained of the struggling computer and electronics company fell into the lap of Nippon Mining Co. of Tokyo for \$1.1 billion.

The agreement by the \$6.5 billion Japanese firm to purchase a controlling interest in the \$761 million Gould capped two years when, in the words of Chief Execu-

E WERE selling businesses to pay for interest, dividends and corporate overhead."

JAMES F. MCDONALD GOULD

tive Officer James F. McDonald, "we were selling businesses to pay for interset, dividends and corporate overhead." McDonald seemed relieved that the struggle was over. "I probably won't stay around for long," he told Computerworld last week, "and I don't know whether I'd even do this kind of thing again."

McDonald, a former IBM executive who managed Gould since 1986, directed the sale of the firm's industrial automation business for \$290 million and last month's \$70 million sale of its semiconductor division to California Micro Devices Corp. of Milpitas, Calif. "We were going through \$50 million in cash a year just in overhead for the semiconductor business," McDonald said. "We had more cash-using businesses than cash-generating husinesses."

Nippon Mining, Gould's trading partner in the Far East for six years, will inherit several high-tech units, including
the following: Gould's Florida-based computer systems group, its fiber-optic components unit and its copper-foil and goldfoil operations, which make printedcircuit board components. Because of
U.S. government concerns, the Japanese
firm probably will not get Gould's Navcom Systems, Inc. division, which manufactures U.S. military systems.

Gould's more than 6,000 computer sites will continue to be supported, McDonald said, while Nippon Mining continues to sell computers with engineering applications. "If any users were ever worried about Gould's viability, they shouldn't worry now. We plan to do nothing differently with respect to supporting our computer customers," he said.

At its height, Gould was a \$2.2 billion industrial firm that mixed its battery-making business with high-tech electronics units. Now, the 27-year-old firm will soon be a subsidiary of a Japanese petrochemical and industrial giant that ranked 162nd in the Fortune International 500.

Failing Gould | HP to eke out delayed desktop

Finds just enough chips for a CAD/CAM, commercial PC

BY J. A. SAVAGE CW STAFF

SUNNYVALE, Calif. — A Hewlett-Packard Co. desktop microcomputer, expected in May but delayed due to the lack of dynamic random-access memory (DRAM) chips, will be announced tomorrow for availability later this month. The model can be used in both commercial and low-end CAD/CAM environments, according to the company.

While this announcement does not mean the DRAM shortage has eased for the company, it was able to purchase enough chips to get the product off the line, a spokeswoman said. And despite the still-high cost of DRAM chips, the PC is priced lower than originally planned, ranging from \$4,850 to \$3,995 for a basic configuration.

The Vectra QS/16, based on an Intel Corp. 80386 processor, is claimed to be HP's most powerful desktop computer. It will run OS/2 and Microsoft Corp.'s Windows as well as HP's New Wave, the company said.

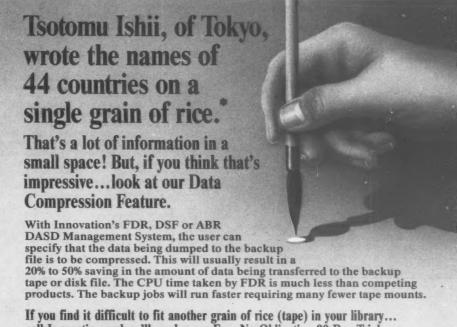
The QS/16 fits in the middle of the

Vectra product line, with a low-end desktop based on Intel's 8086 and two midrange PCs based on Intel's 80286. There are also two high-end floor-mounted 386based systems. The line was originally introduced in September 1987.

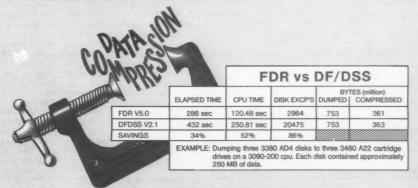
The Vectra QS/16 comes in four configurations; the low-end model has 1M byte of main memory and a floppy disk drive, while the high-end version comes with a 40M-byte hard disk and IBM Video Graphics Array. The high-end machine's price is \$5.495.

The lower cost of the line is a reflection of manufacturing efficiencies and economies of scale with the Vectra series, the HP spokeswoman said.

Price cuts on the other models were announced in late July.



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NEWS SHORTS

Alliances make strained bedfellows

The Open Software Foundation (OSF) last week announced four new members: Cornell University, Locus Computing Corp., National Semiconductor Corp. and Phoenix Technologies Ltd. National Semiconductor subsidiary National Advanced Systems (NAS) has long been teamed up with Sun Microsystems, Inc. — the perceived target, along with AT&T, of the OSF strategy — to develop a mainframe version of Sun's Unix-based operating system. Further complicating NAS' situation is its IBM plug-compatible status, which means it follows IBM's lead; these days, that lead would take NAS to an OSF-based Unix implementation sometime in the future. A NAS spokesman said the company can continue to work in both directions.

NTT gives chips superconductivity

Nippon Telegraph and Telephone Corp. (NTT) announced a synchrotron radiation device last week that is reportedly able to support the detailed circuit integration required to manufacture highly integrated semiconductors, such as 64M-bit dynamic random-access memory chips. NTT claimed that the orbit radiation system, located at its Atsugi, Japan, plant, is the world's first to use superconductivity to generate a magnetic field.

Sign up for Star Wars access

The Strategic Defense Initiative (SDI) Organization, a unit of the U.S. Department of Defense, announced recently it has established a computer bulletin board system to provide the private sector with leads on SDI technology with commercial spin-off applications. Any U.S. citizen or corporation can access the Technology Applications Information System once an export controls agreement has been completed and certified.

NBS gets new moniker

By signing the omnibus trade bill last month, President Reagan has set in motion several changes in U.S. trade policy in addition to changes at the National Bureau of Standards. The NBS is renamed the National Institute of Standards and Technology and has been given added responsibilities to encourage U.S. industry to implement new technologies. The bill also relaxes export controls and makes it easier for industries to file trade complaints against foreign countries that violate U.S. copyrights and patents.

Bellsouth info gateway opens

Bellsouth Corp. last week introduced an information service gateway for the Atlanta area, the first since a federal court ruled that the regional Bell holding companies may offer routing and transmission gateways to information service providers. The Transtext gateway allows microcomputer users to dial a single number and reach a menu of 18 information services. The software was developed by Integrated Communications Systems, Inc. in Roswell, Ga.

Rockwell signs on to ISDN

A Rockwell International Corp. site in Dallas last week became Southwestern Bell Telephone Co.'s sixth Integrated Services Digital Network (ISDN) customer. Rockwell's contract with the regional operating company calls for the deployment of 1,200 ISDN lines to handle voice and data transmissions for all 40 buildings on Rockwell's Dallas site. Initial ISDN applications planned by Rockwell include PC-to-PC connectivity and modem-pooling. Service is scheduled to be cut over in late December.

Unisys cuts PC prices

Unisys Corp. last week reduced prices of its Personal Workstation2 family by 2% to 17%. With the reductions, Series 850 prices now range from \$4,318 to \$6,702; Series 800 price tags range from \$\$5,025 to \$7,525; and Series 500 prices run from \$2,695 to \$4,205.

Beleaguered MSA lays off 230

Foundering in applications market, firm streamlines administration

BY CLINTON WILDER

ATLANTA — A year of organizational upheaval and financial setbacks at Management Science America, Inc. (MSA) reared up again last week as the mainframe applications developer slashed 230 jobs, representing 9% of its work force.

The layoffs, effective immediately, represented MSA's largest work force reduction since Chairman John P. Imlay Jr. joined the firm in 1969. They will result in a \$20 million to \$25 million charge in the third quarter. The charge also includes the closing of a development center in Winston-Salem, N.C., and the write-off of other projects.

The affected jobs included administrative, development and customer support positions. MSA cut 70 jobs at its Atlanta headquarters and 50 in Winston-Salem. It also consolidated manufacturing software development operations in Eagan, Minn., home of the unit that evolved from the acquisition of Comserv, Inc. in 1986.

"I felt we were top-heavy in

administration and in building certain tools," Imlay said. "Our expense base was too high, and we needed to be more nimble and more responsive."

Last week's announcement



MSA's Imlay is beset by troubles

was the latest in a series of headlines for MSA in 1988, few of them good. The year has brought the following events: • The departure of Senior Vice-

President Dennis Vohs and other top managers.

• An unsolicited takeover offer from Computer Associates In-

ternational, Inc. — prompted in part by MSA's steadily declining stock price — which MSA rejected.

 The resignation of veteran President William Graves.

A 50% drop in operating income and a 23% decline in software license revenue in the first six months, compared with 1987.

"It's a step, but I'm not sure it's everything that needs to be done," said Mark Dunkel, an analyst at Atlanta-based Robinson Humphrey Co. "The mainframe software market is much more mature, and MSA has to recognize that. You can't just grow your top line and grow your profits any-

more."

Imlay said MSA will achieve development efficiency by making its software tools compliant with IBM's Systems Application Architecture, rather than proprietary. "You let IBM build the tools and use them as standards for your applications," he said.

Lotus ships TAC update

BY PATRICIA KEEFE

CAMBRIDGE, Mass. — The latest release of Lotus Development Corp.'s The Application Connection (TAC) will target host-based data access with ease-of-use and performance improvements.

Announced last week, TAC 5.0 will reportedly become available in two phases, with the first shipping in the fourth quarter.

Lotus claimed reductions in both CPU access time and the elapsed time required to perform mainframe data access functions.

For example, it previously took TAC 27 CPU seconds to perform an IBM DB2 select-and-extract of 100 records; Release 5.0 will accomplish the same task in just three seconds, according to TAC product manager Scott Eliot.

Easier access

The release is also said to ease efforts to access host-based data. Specifically, the new version will eliminate the labor and skill requirements previously demanded of personal computer users seeking to selectively access and use mainframe data, Lotus said.

In addition, TAC 5.0 is said to be compatible with Lotus' Blueprint data architecture, which was announced in March. As a cross-Blueprint driver, enhanced TAC reportedly will allow future Lotus PC applications containing the Blueprint interface — beginning with 1-2-3 Release 3.0 — to access mainframe databases via TAC.

The most recent revision of TAC also sports a new user interface and added functionality:

• A new Catalogue Facility and Selection Assistant, which will assist users in locating data on the mainframe and determining the proper selection syntax for extracting data.

 Data aggregation, which will summarize data during the extraction process, relieving users of the neccessity of having to sift through a superset of irrelevant data

 Sequential Access Method (SAM), which will provide selective access to mainframe data stored in sequential files and reportedly also provides an entry point into virtually all other mainframe environments not directly supported by TAC.

Phase 1 of TAC will include DB2, SQL/DS, Focus, SAM, 1-2-3 and Symphony; Phase 2 will include the 1-2-3 (3.0) Connection and will reportedly ship in early 1989.

TAC 5.0 costs \$40,000. Volume discounts are available for both PCs and mainframe software components.

DEC spends heavily on Unix systems

Digital Equipment Corp. is currently spending more development dollars on Unix-related operating systems than it is on its own VMS operating system. Gail Grant, a DEC field readi-

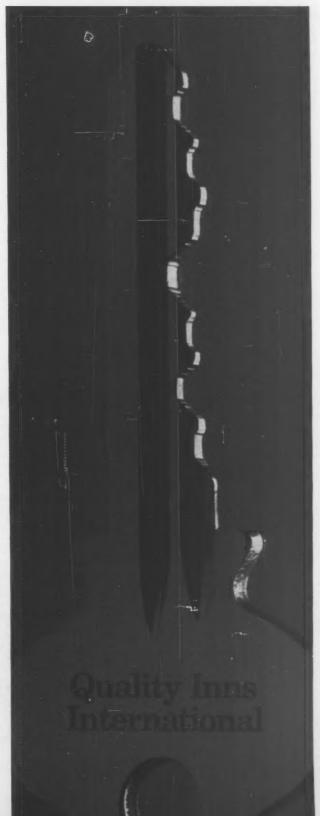
Gail Grant, a DEC field readiness manager for VMS, Ultrix and DEC Windows, recently confirmed a report that DEC is spending equal amounts on Ultrix and VMS.

However, DEC is also spending millions more as a sponsor of the Open Software Foundation (OSF) and its work on a Unixbased open operating environment. Thus, when OSF expenses are added to DEC's Ultrix investment, the Maynard, Mass., minicomputer maker is spending more on Unix-related development than on VMS.

Grant termed DEC's Unix spending "a response to customer need."

Grant said DEC has been spending increasing amounts on Ultrix in recent years. In the past year, however, that investment was sharply increased to the point at which it drew level with VMS spending. She said spending on Ultrix alone would not exceed the amount spent on VMS, however.

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Unisys

FROM PAGE 1

Industry sources said the mainframes will be based on uniprocessors capable of more than 13 million instructions per second (MIPS). The high-end machines may also include two significant software features: a revision of the 1100 operating system and the ability to support both the Mapper and Linc fourth-generation Unisys languages.

Until now, the former Sperry Mapper product ran on 1100s only and Linc ran only on the A series machines of the former Burroughs Corp. architecture.

Sperry line doomed?

Observers speculated that while the 2200/600 will bring needed power to the 1100 installed base, the Linc inclusion may be a subtle indication that the old Sperry line is eventually doomed. Unisys has promised to support both the 1100 architecture and the A series architecture indefinitely.

But that goal could theoretically be accomplished by moving both Burroughs and Sperry applications — written in high-level code — to some future merged machine, said George Lindamood, program director of the Gartner Group, Inc.'s industry service research unit. IBM took a similar approach in merging the System/36 and 38 lines into the Application System/400 architecture.

A four-processor system is expected to run at 46 to 50 MIPS, thereby competing with IBM's 3090 Model 400E in power. System components, including chips, are said to be much denser than those used in the 1100. The 2200/400s, for example, are expected to require 70% less cooling, power and space

than the 1100/70 computers they replaced.

Industry analysts expect the new Unisys mainframes to offer similar price/performance to the 2200/400 models; those six models ranged from 2.4 MIPS to 14 MIPS and were priced from \$178,000 to \$952,000.

"It's a real hummer, from what I've heard," said Ault, also information systems director at Creighton University in Omaha, Neb. "Changing over to the new system is supposed to be no

"HEY'RE throwing a bone to the 1100 guys."

GEORGE LINDAMOOD GARTNER GROUP

harder than moving to a new level of software." Ault declined to cite any specifications of the new machines, however.

Despite the boost in power, some observers said the high-capacity machines may have come too late. "They're throwing a bone to the 1100 guys," Gartner's Lindamood said. "But it remains to be seen whether it will keep the 1100 users in the fold."

International Data Corp. (IDC) in Framingham, Mass., estimated that there were 4,000 Sperry 1100 mainframe sites worldwide in 1987. The 1100/90 machine alone now accounts for more than 1,000 installations worldwide, Unisys said.

However, the widely installed base shows signs of erosion. Attempts to informally survey Unisys 1100 shops last week found that many 1100 sites are defecting to IBM or Digital Equipment Corp. — and will not change

their migration plans, even in the face of higher capacity.

"Our company made a decision six years ago to migrate to IBM systems," said one manager at Racal-Milgo, Inc. in Fort Lauderdale, Fla. "We're planning to ship our 1100/91 out of here by next June."

The sooner the better

However, other 1100 users said they would be interested in a near-term capacity boost. "We have a new project that will produce growth in our capacity needs," said Joseph Buracher, director of the computer management division at the Department of Housing and Urban Development (HUD) in Washington, D.C. "The question of conversion is moot for us, considering that we already have millions of dollars invested in Sperry software."

Defections in the 1100 user base are being blamed on fallout from the Sperry-Burroughs merger. Many users said they felt overlooked by the Burroughs side of the Unisys opera-

"One had to assume that there would be user trauma and concern over the merger," said Donald Bellomy, a senior analyst at IDC. "Beyond that, the Sperry users had to face a lack of high-capacity hardware."

The Sperry 1100/90 is far less powerful than the high-end A series Model 15 and Model 17 mainframes, Bellomy noted.

No matter how powerful the 2200/600 is on announcement, Unisys will face stiff competition from IBM's burgeoning line of 3090 mainframes. "If IBM had not announced the S models, this announcement would have held more interest for large shops," Gartner Group's Lindamood said. "But now, it may be a system that's a day late and a dollar short."

Oracle packs products, training for CASE trip

BY NELL MARGOLIS

BELMONT, Calif. — Relational database maker Oracle Corp. today will formally announce its imminent assault on a new market segment: CASE.

Oracle is riding into the hotly contested computer-aided soft-ware engineering (CASE) market armed with a three-pronged product line and backed by a 350-person consulting arm to train new users, according to Alex Mollen, the company's director of CASE tools. Commercial MIS users, he said, are Oracle's initial target.

CASE Designer, the principal interface to the Oracle CASE environment, is a menuoriented, mouse-driven, multiuser front-end graphics design tool. In its first implementation. it will run on Sun Microsystems. Inc. multiuser workstations. It will be available on Digital Equipment Corp. VAX and Hewlett-Packard Co. workstations by year's end, Mollen said. Plans are also afoot to port to IBM and Microsoft Corp.'s Presentation Manager when it becomes widely available.

CASE Dictionary, an enhancement of Oracle's SQL Design, will be central headquarters for Oracle CASE, housing and tracking all software development project information and providing a database for the development staff. The fact that the dictionary will be implemented through the Oracle relational database gives it a great amount of flexibility as to hardware platform and allows it to be shared by multiple users over a net-

work, according to company claims.

CASE Method, an expansion of the company's proprietary systems development, employs a top-down approach particularly suited to software applications designed for the commercial world, Mollen said.

With a manager's mind

Other popular CASE methodologies, he noted, tend to use current systems as their starting point; in contrast, Mollen said, CASE Method starts from senior management's understanding of the business' needs.

Earlier this month, Alameda, Calif.-based Relational Technology, Inc. entered the CASE market through an alliance with Providence, R.I.-based frontend CASE vendor Cadre Technologies, Inc.

By front-ending its own SQL Star Forms and SQL Star Report Writer, Oracle plans to offer a cridle-to-grave CASE environment. Mollen said.

The company said it plans its first U.S. shipments for November, at prices starting at approximately \$8,000.

Oracle's offering, at least in its initial implementation, is not without its drawbacks, said Bill Martorelli, director of software development services at New Science Associates, Inc., a market research firm based in South Norwalk, Conn. Opting for a proprietary methodology "could be a problem in this business," he said, just as wrapping a CASE system around a relational database could slow the otherwise speedy response time of a workstation-based design tool.

Managers say no OS/2 until 1990

BY MICHAEL ALEXANDER

SANTA MONICA, Calif. — A majority of corporate information center managers will wait until at least 1990 before deciding whether to commit to IBM's OS/2 operating system, according to a study from Crwth Computer Courseware.

The developer of computerbased training programs said its survey of 475 large firms indicated that 52% of the respondents plan to migrate from DOS to OS/2 only if their applications demand it, said Beatrice Garcia, who conducted the survey.

"Right now, they have a waitand-see attitude," she said. "They are not buying the line from IBM that OS/2 is the wave of the future."

The Fourth Annual Crwth

Survey was designed to identify new trends and directions in enduser computing in large organizations. More than half of the respondents were from the Fortune 1,000, and more than three-quarters of participating companies had more than 1,500 employees and annual revenue in excess of \$100 million.

The Crwth (rhymes with truth) survey revealed that information centers are firmly established in most large corporations. Eighty percent of the survey participants had an information center in operation, and another 8% were piloting or exploring the concept.

"In 1985 — the year of the first survey — the primary goal of information center managers was to develop computer literacy," said Garcia, who also edits the "CBT Newsletter" for

Crwth. "Now managers say the main benefit is to improve job productivity."

End users are taking their newly obtained computer skills and developing a wide range of applications.

The report also examined the growth of personal computers, local-area networks, mainframeto-micro connectivity and integrated office systems.

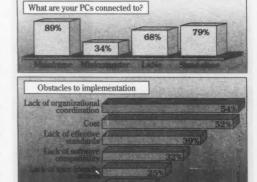
Although 79% of information centers support stand-alone PCs, 89% are also supporting PCs connected to mainframes. A majority — 68% — support PCs connected to LANs, and 34% support PCs connected to to minis.

"Half of the respondents have a strategic plan to integrate LANs, PCs, minis and other systems, and 15% say they are in the process of implementing an OA system," Garcia said.

Give and take

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Owners wary of CDC challenge to 3090 service

BY ROSEMARY HAMILTON

Mainframe users gave Control Data Corp. a cool reception last week upon learning that the company will begin offering maintenance service for IBM's 3090 series this fall.

"We would be slow to move anywhere else because of the good service we're now getting [from IBM]," said James Johnson, data center director at Hallmark Cards, Inc. in Kansas City, Mo. Johnson oversees a 3090 Model 600E.

Johnson and other IBM large-system users contacted last week said they would

be leery of handing over maintenance responsibilities to a non-IBM entity when it comes to a 3090, the most critical and expensive component of their data centers.

CDC amounced plans to offer 3090 maintenance service late last month and is believed to be the first third-party vendor to offer this service to IBM's top-of-the-line customers. Sorbus, Inc. is putting together a similar service but is not set to officially announce it, according to Tom Richards, vice-president of marketing.

"From what I've seen, IBM's largesystem support has been excellent," said Don Goodspeed, president of Computer Maintenance Consultants Ltd. in White Plains, N.Y. "I think you'd find very few large users who would say upon hearing this, 'Oh good, what's CDC's phone numher?'

Nonetheless, Goodspeed also said CDC's plan has potential because even though IBM's service is highly rated, it is also the only game in town. In addition to providing users with an alternative, CDC will use a price break as another draw. A CDC spokesman said the company's 3090 service packages will have price tags ranging from 10% to 15% less than IBM's maintenance prices.

"On the surface, our interest would be strong," said Chuck Beyer, director of

data processing at the Auto Club of Michigan, which uses a 3090 Model 400E. "But we'd wait at least a year to see what their track record is."

Risk-hedging

Rick Bender, manager of computer operations at Blue Cross/Blue Shield of Topela, Kan., said his company recently contracted with CDC to handle maintenance for its 3480 tape drives. Bender said the idea is to slowly test CDC's service on the lower risk data center components before making a broad-scale commitment to the company.

"We can lose a drive and not be severely impacted," Bender said. "We're not ready to give it all over right off the bat."

Bender also questioned the value of CDC's lower prices. Were a major problem to occur, Bender said he is unsure—based on what CDC has revealed about its new service—that CDC would be able to respond as quickly and as efficiently as IBM. As a result, if the system supporting several hundred users were down for several hours, that one outage alone could cost his company the same amount as what would have been saved from going with the CDC service.

A CDC spokesman said the company will rely on its remote support center in Minneapolis to service 3090 customers. Unlike the IBM maintenance plan, the CDC plan will not use the automatic dialup capability that 3090 users can now employ for maintenance problems. A user will have to detect a problem and place a call to CDC for service.

Boston bypasses South Africa ban to make IBM buy

BY J. A. SAVAGE

BOSTON — Claiming that the acquisition of a used IBM mainframe does not violate Boston's economic sanctions against South Africa, the city is looking for thirdparty bids on a 3090 Model 200E.

In June, City Councilman Charles Yancey said that Boston was so serious about sanctions against South Africa and its policy of apartheid that "if it means scrapping the IBM environment for a new system" he was prepared to proceed. IBM products are still distributed in that country.

Meanwhile, according to city MIŚ Director Allan Stern, Boston's attorney said that the sanctions would not impact the purchase of a computer. Boston currently operates an IBM 3081 D.

Last week, Yancey said the city council is not involved in procurement decisions. "It is technically in accordance with the law but not necessarily the spirit of it," he

Boston's decision means that only one city with sanctions against South Africa, Charleston, S.C., does not own computers manufactured by companies that do business in South Africa. According to that city's director of data processing, David Claymont, Charleston already had Prime Computer, Inc. systems at the time it passed sanctions against South Africa, and the city could find no link between Prime and South Africa.





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n July 18th, 1988, ORACLE made history by setting performance records in every major computing environment. Using industry standard benchmarks, ORACLE set speed records on IBM compatible mainframes running MVS, DEC VAX minicomputers running VMS, and minicomputers running UNIX.

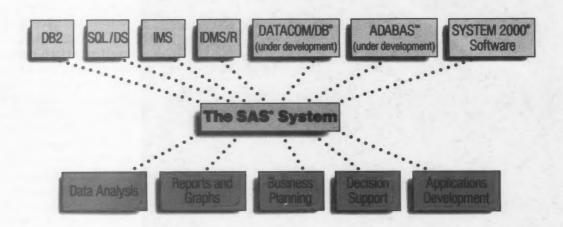
ORACLE set the world record for performance by running 265 transactions per second (tps) on a 3090-600E class Amdahl* mainframe running the IBM MVS operating system. This breaks the old record of 240 tps set by a cluster of 16 Tandem computers.

ORACLE also set the record for DEC minicomputers by running 49 tps on a VAX 6240 running VMS. This breaks the previous VAX/VMS record of 29 tps set on a VAX 8700 connected to a VAX 8800. ORACLE's results were audited and verified by the Codd and Date Consulting Group. And not only is ORACLE's performance nearly twice as fast as this previous record, but ORACLE's cost per transaction is almost four times better than that of the other system.

ORACLE set a UNIX record of 124 tps on a large minicomputer from Sequent as well. Once again, the results were independently verified by the Codd and Date Consulting Group.

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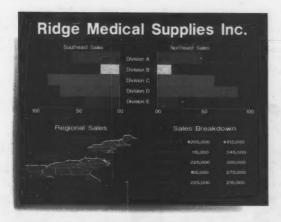
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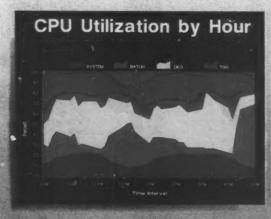
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CA sues Altai, charges theft of source code

BY CLINTON WILDER

CAMDEN, N.J. — In its most aggressive legal move to date against a smaller competitor, Computer Associates International, Inc. last week charged Altai, Inc. with stealing source code from CA-Scheduler for its competing Zeke job-scheduling product for IBM mainframes.

The lawsuit caused Altai to terminate its agreement to be acquired by Goal Systems International, Inc. for \$14 million [CW, Aug. 8]. "We have to focus on the suit right now, and it's going to take a lot of time and attention from management to do that," said Gary Leslie, chief financial officer at Arlington, Texas-based Altai.

In the lawsuit filed in U.S. District Court here, CA asked the court to impound and destroy all existing copies of Zeke, which accounts for 80% of Altai's software revenue.

Japan photonics: Light-years ahead

BY MITCH BETTS

WASHINGTON, D.C. — The U.S. is in danger of handing Japan another triumph in advanced information technology. This time it is in the arena of optical computing and networking, according to a study by the prestigious National Research Council released last week.

Although the use of fiber optics for long-haul communications is common-place, the future markets for optical processing are in high-speed local-area and metropolitan-area networks, advanced computer architectures and optical storage, the report said.

For example, a \$1 billion to \$3 billion market is possible if the copper wires in the nation's local telephone networks are replaced with fiber-optic cables to support a broadband Integrated Services Digital Network.

In this technology, known as photonics, the U.S. "has been a leader in research and invention, but it is already a follower — or worse, an observer — in the development of many of the commercial products of the field," the study concluded.

To reverse this trend, the research council called for sustained private and government research, improvements in manufacturing processes to bring down costs and the creation of a national demonstration project.

Robert M. White, president of the National Academy of Engineering, which commissioned the study, said Japanese optoelectronic technology is more advanced than U.S. technology, and Japanese firms have been able to get salable products to market faster than U.S. firms

"Photonics is at a stage where hightemperature superconductor technology may be 10 or 15 years from now," White said, suggesting that the U.S. needs to learn how to commercialize photonic technology so it can apply the same lessons to superconductors.

CA specifically cites two Altai employees who formerly worked for CA — James P. Williams, president of Altai's software division, and Claude Arney. Although Williams and Arney are not named as defendants, the suit noted that both had access to the source code of the Adapter component of CA-Scheduler. CA alleged that parts of the Zeke object code are "essentially exact copies" of Adapter code.

"We are convinced that portions of our code have been used without our authority," said Michael McElroy, an assistant vice-president of finance and corporate services at Garden City, N.Y.-based CA.

"Everyone in the software industry agrees that the infringement of copyright and code should not be tolerated."

Williams left CA in 1980, and Arney left in 1984. Although CA-Scheduler development began in 1981, development of the Adapter component, which allows CA-Scheduler to run on both IBM VSE and MVS, began in 1979 in connection with another CA utility. Altai's Zeke also runs on VSE and MVS.

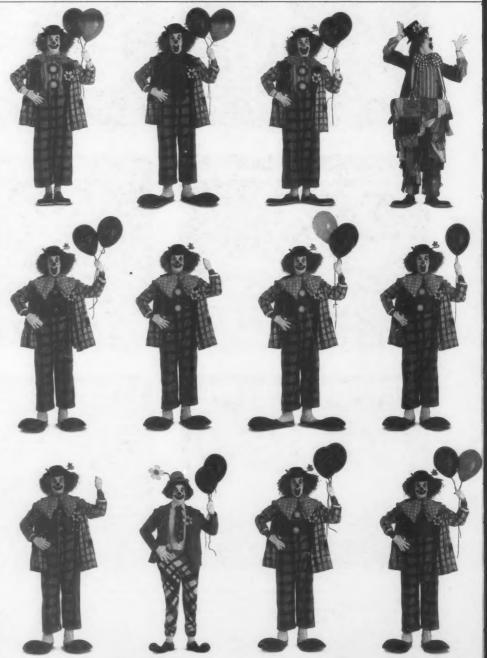
CA has brought several unfair-competition lawsuits against former employees who have gone to competing software developers [CW, July 4] and recently settled a trade-secret theft suit against Duquesne

Systems, Inc. But the Altai case contains CA's strongest allegations to date of copyright infringement.

CA has one other copyright infringement case pending, a 1986 suit against American Fundware, Inc. in Steamboat Sorings. Colo.

In that case, CA alleged that American Fundware accounting software for the IBM Personal Computer infringed on the copyright of accounting programs developed by Stuart P. Orr Associates, which CA acquired in 1983.

In addition to the destruction of Zeke tapes, CA asked the court to order Altai to account for all profits from Zeke, forfeit all computers that could be used to make copies of Zeke and award CA unspecified actual and punitive damages.



14

COMPUTERWORLD

SEPTEMBER 5, 1988

Tandem, Nynex target financial market

BY J. A. SAVAGE

CUPERTINO, Calif. — Nynex Information Solutions Group, Inc. signed up last week as a systems integrator with Tandem Computers, Inc., primarily to gain business in the financial markets in New York and Boston.

Nynex wants to offer on-line transaction processing (OLTP) and fault tolerance to its financial customers, according to Ken Mortara, director of channel marketing. And although the group also has integrator agreements with the likes of

Digital Equipment Corp., Hewlett-Packard Co. and IBM, it has not previously offered fault-tolerant OLTP equipment.

While not ruling it out, Mortara said Nynex currently does not have an agreement to sell IBM's fault-tolerant equipment.

Second place

Nynex is the second regional holding company systems integrator for Tandem. The first — Applied Communication, Inc., a subsidiary of US West — signed an integrator agreement earlier this year.

Tandem is betting a large chunk of its

future on telecommunications applications. Four of the seven regional Bell holding companies and GTE Communication Systems have direct ties to the firm, according to Dick Dworak, Tandem's manager of strategy for telecommunications. The remaining holding companies are Tandem buyers, he said.

Tandem is also developing telecommunications products called Intelligent Networks. They are intended to allow phone companies to offer more services, such as an answering service that would play back messages without an answering machine.

Plans readied to mold LAN bridge to ISDN

BY ELISABETH HORWITT
CW STAFF

A three-vendor alliance is expected to bring out products that will add LAN-to-LAN connections to the all-too-short list of usable Integrated Services Digital Network (ISDN) applications.

Lachman Associates, Inc. said it plans to announce in two weeks a router that reportedly leverages the flexibility and cost efficiencies of ISDN to link two widely used networking systems: Sun Microsystems, Inc.'s Network File System (NFS) and Transmission Control Prococol/Internet Protocol (TCP/IP).

Tentatively called Lachman ISDN LAN Bridge, the product consists of software that runs on a nondedicated workstation based on the Intel Corp. 80386 microprocessor and AT&T's Unix System V, Release 3.

The workstation, which must be equipped with an ISDN Basic Rate Interface board, will monitor network traffic on its local-area network for packets addressed to nodes on remote LANs. The product takes these packets and sends them over a 64K bit/sec. ISDN channel to the correct LAN destination.

NFS users can use the router to transparently access files on a system that resides on a remote LAN, according to company spokesman Richard Belcastro.

The ISDN connection offers potential savings for router users, since they only pay for the link when it is actually carrying LAN-to-LAN traffic — as opposed to a dedicated line that carries a set monthly cost, said Howard Fiderer, product manager at Teleos Communications, Inc. Teleos and Lachman are currently discussing integration and joint marketing of Lachman's router with Teleos' ISDN boards, both companies said.

Scaring up interest

Lachman has had a hard time drumming up interest in its router among LAN vendors, Belcastro said. Ungermann-Bass, Inc., Banyan Systems, Inc., 3Com Corp. and Novell, Inc. all said they had no immediate plans for developing ISDN bridges.

On the other hand, several regional Bell holding companies have expressed interest in the product for their ISDN user sites, Belcastro said. Southwestern Bell Corp. already has "heard a lot of demand from customers for ISDN as a transport mechanism between LAN systems," said Southwestern Bell spokesman Richard Stephenson.

DGM&S, Inc., a Mt. Laurel, N.J., vendor that currently supplies the ISDN Basic Rate Interface coprocessor for Lachman's router, is also working on its own ISDN-based LAN router, which will support IBM Nethios-based systems, according to Lou Eggebrecht, the company's senior vice-president of development.

Pricing for the end-user version of the Lachman ISDN LAN Bridge, including NFS, TCP/IP and an ISDN device driver, will range from \$500 to \$1,000 and will be available immediately, the vendor said.

Let's talk about relational data bases. But first, find the clown with the red nose, top hat and no balloons.

If you picked the first clown from the right on the top row, you didn't need the help of a relational data base system.

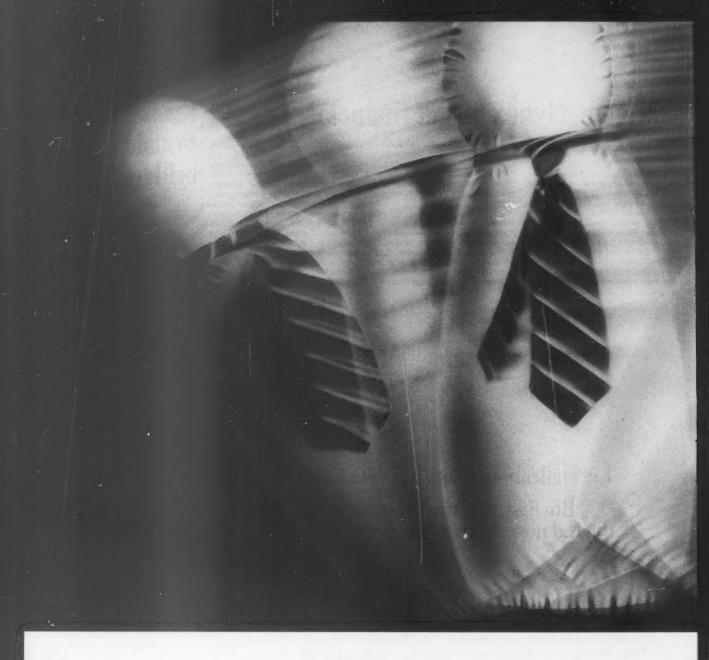
Of course, real-life business problems are considerably more complicated. That's why IBM, the leader in relational data base technology, offers a wide range of products to work with a full range of hardware, from workstations to midrange and mainframe computers.

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The longshot has come home.
Which suggests that if your
DP/MIS people aren't recommending Amdahl products, you're missing a good bet.

amdahl

A good idea.

EDITORIAL

Systems do count

HORTLY AFTER Computerworld's first annual salary survey appeared last year, a systems manager from a small Chicago bank sent a smoking letter to the editor.

It seemed his database administrator and a few programmers had read copies of the survey. They were somewhat less than happy to find their salaries greatly lagging behind those of their counterparts in the area.

'You're making trouble," he wrote. "What am I supposed to do about [their problem]?"

Indeed.

So it is with a fainthearted apology to that poor soul that we proudly present our second annual salary survey, beginning today on Page 1.

We bill it as the most comprehensive survey of its kind because of the number of qualified responses we received — 1,200 — and the quality of those responses — we collaborated on the study with the Data Processing Management Association

In sifting through the piles of salary figures, cross-tabulated by industry type, it becomes clear that salaries - and, most likely, career paths - are most attractive in industries in which information systems are finely interwoven throughout the fabric of the central business organization.

For example, systems professionals in most job categories in utility companies earn consistently more than those in other industries. While it is true that most utilities function as regulated monopolies, it is also true that information systems are generally thoroughly diffused throughout the utilities.

This fact will be clearly borne out next week when our subscribers are mailed the Computerworld Premier 100, which lists the companies that have invested most effectively in information systems.

That listing is imbued with a heavy concentration of — you guessed it — utilities. And the size of the systems investment is but one of six criteria used to evaluate companies for inclusion in the Premier 100.

Our salary survey also revealed one rather disturbing set of data. When compared with our survey of one year ago, salaries for professionals providing end-user support actually fell across all job categories. These categories included information center managers and specialists as well as personal computer managers.

Clearly, this is the wrong direction to be heading in an area of such critical importance to the overall success of information systems planning. So it is curious as to why this apparently becomes an area to cut first when the budget ax is swung.

One other point to note: Next week, we will also feature part two of this survey, the job satisfaction component. That presentation will show that these days, it takes a lot more than money to keep them down on the MIS farm.



LETTERS TO THE EDITOR

Send it back

I am writing about the controversy that erupted when Sun Microsystems, Inc. and AT&T agreed to standardize Unix and spread with the formation of the Open Software Foundation.

The argument over which flavor of Unix should be official is as significant as the argument over which flavor of Kool-Aid is bet-

My apprehension is caused by the so-called requirement for Unix that infests so many computer procurements. That apprehension is compounded by my recent experience as a manager responsible for installing a Unix variant on a computer.

What is the source of this Unix requirement? One can only imagine the beleaguered MIS director delegating the decision about the operating system on the new computer ever downward, until it finally hits the office of the newly hired computer science graduate who was born and raised in Unix. And knowing full well that Unix runs on anything, the requirement for Unix makes it into yet another specification.

I have a suggestion for the next techie who requires Unix for his company's new computer system: Give the chief executive officer and any three vice-presidents a half-hour demonstration on a Unix system and tell them that this will be their PC environment with the new system. Then ask them to sign the appropriation request for the new system.

Unix was written long ago by a couple of computer scientists to make their jobs easier. As a software development environment, Unix is widely acclaimed. As an environment for doing what I must call real work, it is, well, quaint.

So I say, good for you, Messrs. Akers, Olsen and others. I sincerely hope you are successful in studying, planning or standardizing Unix to death. It couldn't happen to a better system. Let's take the first step toward returning Unix to the computer science laboratories where it and its users are happiest.

James A. Brooking Newport, R.I.

A good law

Brookhaven, a community on Long Island, recently enacted the first VDT law in the U.S. This move should be applauded by data processors all over the country.

The law requires that terminals be tested periodically to be sure they are still safe as well as contain guidelines for worksta-tions and worker health, including eye tests.

We have every reason to believe that the vast majority of terminals are safe and that the vast majority of users will experience no ill effects.

However, there is strong evidence of two things. First, some workers will have problems. Second, some terminals will malfunction and vastly exceed permissible emission standards. Therefore, something should be done to identify both workers and terminals having problems. This is what the Brookhaven law attempts to do.

This is a good law, and we as data processing professionals should recognize this and encourage similar laws in our own communities.

> Russell Hoffman Owner P11 Enterprises Bridgeport, Conn.

Netview hype

After reading "Coping with Netview foibles" [CW, July 4], I felt that a few items needed to be explained about IBM's Netview functionality. Pacific Power & Light Co. installed Netview Release 1 when it was first available and is not running Release 2 in its machines.

Release 1 was a bundling of four existing program products and was somewhat easier to install, but most of the customizing after initial installation was the same. Netview user interfaces are about the same as the older separate products with some enhancements in moving between the products. Netview PC did not fit in our environment because of the expense of having a personal computer dedicated to this function at each service point and the lack of any command capability to the device that alarms are being collected

Release 2 has one significant enhancement in that it started as subsystem and therefore can do much more than VTAM control, such as automating startups of other subsystems or problem recovery outside the VTAM environment. The Netview interface was improved to add command capabilities, but the caveat is that someone needs to write code for the device.

Netview has been hyped up, and someone needs to advise u Continued on page 21

Computerworld welcomes comments from its readers. Letters may be edited for brevity and clarity and should be addressed to Bill Laberis, Editor, Computerworld, P.O. Box 9171, 375 Cochituate Road, Framingham, Mass. 01701.

Desperately seeking savvy

New software can often make you feel as helpless as a backseat passenger

ASHLEY GRAYSON



Productivity depends on savvy. Having all the answers a keystroke away is good only if the decision maker

knows what key to strike.

Having abandoned the apprentice/journeyman/master structure for learning by doing, modern business depends on the written word to convey meaning and methods. Reading replaces rote. Yet, the information received by reading can be no better than the quality of the writing. And everyone gripes about the documentation.

Computer system documentation involves three distinct types of writing: investigative journalism, clear exposition of concepts and precise description of procedure.

Not every writer possesses all of these skills, but unless they are brought to bear on a document, the document will fall short of delivering the understanding the user needs to apply the product successfully.

Equal in importance are the editorial requirements. These include setting goals, maintaining focus and preproduction project management of the document.

This latter catchall includes ensuring that the writer delivers consistent tone and voice in the prose, maintains style in the document and oversees fact checking and testing. Computer documentation must be tested too.

Only after these critical issues of the documentation process have been addressed can the actual production cycle begin — the final proofreading, typesetting and layout that lead to printed materials.

Desktop publishing is a preproduction technique that has been universally sold as a miracle method that can leap directly from the need to the finished product. It can, in fact, improve productivity at almost every step — but only if properly applied.

Anyone not benefiting from desktop publishing tools and techniques is a victim of poor documentation of desktop publishing itself.

If desktop publishing won't solve the documentation dilemma, what will? The answer, of course, is more clearly understanding the nature of documentation.

By careful planning — asking

Grayson is the founder of ADG, a San Pedro, Calif.-based organization that develops sales tools and programs for high-technology companies. the right questions, then answering them — documentation can be made a full contributor to computer systems.

If this article were an all too typical example of technical documentation, it would now either rehash all of the concepts discussed in the first three paragraphs, drop into a narration of a procedure or begin a long tutorial.

Instead, we will draw an analogy that will help position the concepts and procedures in light of the goals. Developing documentation that serves the user is like driving a 5-year-old child to his grandmother's house.

reader of the document must be accommodated.

The scenery that flashes past may be interesting, but without a sense of context it will quickly lose appeal. Without guidance, hands-on activities and relevance, the user will burn up valuable dollars on the customer support line — just as the child will repeatedly climb over the backseat to ask, "Are we there yet?"

The really dissatisfied child can cry and kick and ruin the folks' BMW. The really dissatisfied user can kill further sales by bad word of mouth. This will ruin the developer's BMW.

Documentation problems of-



TOM LULEVITCH

Consider the experience of strapping a child in the back of a car for a six- or seven-hour auto trip. Any parent will verify that some advance preparation is required. Sitting in the backseat of a car is equivalent to the experience of working with a new software or hardware product for the first time.

The youngster (user) will be confined to a small physical space and be subjected to twists and turns over which he has no control. The isolation of the child from his playmates (co-workers) and familiar toys (software he's comfortable with) matches the documentation dilemma nicely.

Except in the case of 100% clone products, the user is breaking new ground. Few other human activities are as new as working with new software.

And the user is alone, because no printed or on-line documentation has ever been developed for group reading. The document must carry the entire burden of holding interest and responding to the reader's need for involvement.

Just as the child's trip will be more endurable if the goal is clearly understood and the benefits of arriving are explained, the ten begin with misconceptions about the relationship of documentation to the product. Software, hardware and manuals are all part of a whole. Documentation is not an afterthought to be started only after the product is in beta testing.

Asking the question, "How can we explain this?" during product development can do more to ensure an appealing product than most programmers and engineers would be willing to admit.

Documentation is the only chance a development team has to tell its story to the world, yet they often resent being part of that effort. Creating quality manuals should not be left to the lowest bidder, the junior engineer or the newest employee "so he can learn about the product."

Don't forget the editorial process. Writers write with the fire of inspiration. Editors fan away the smoke so the readers can see the light.

First and not last, management should never succumb to the fatalistic belief that "nobody reads it anyway." Not reading the documentation is a fatal exercise best left to the user.

Right choice doesn't need force-fitting

EFREM MALLACH



I subscribe to a monthly localarea networking magazine. It reads as if networks of desktop microcom-

puters are the only way a work group can process information.

No other options darken its horizon. The only decisions the magazine ever faces are the questions of which personal computer to choose and which LAN — nontrivial questions, to be sure, but not always the basic issue.

I also spend time with suppliers of departmental systems. They believe in dumb terminals sharing a processor. LANs? A wasteful duplication of hardware and extra complexity. At best, they solve a problem that should have been avoided in the first place — by purchasing a multiuser system.

Bombastic bombardment

Computer users are bombarded by messages from both of these groups and others. To stay sane amidst the confusion, users must remember a simple rule: There is a spectrum of solutions to any information processing problem. No one solution is always best for everyone.

The spectrum of solutions for work group computing is worth recapping, because in the heat of decision-making, people don't always take time to review their options.

They often go with whatever technology they read about most recently, whatever the most persuasive sales representative is pushing or whatever is getting the most hype these days — usually LANs.

Too often, the result is that a user buys a system that does too little, costs too much or both. Yet mistakes can be avoided by systematic consideration of the alternatives.

The spectrum of choices begins with desktop microcomputers linked via a "sneakernet"—running disks from user to user. This low-tech solution raises basic compatibility issues that apply to any network.

A step up from a sneakernet is a low-end LAN. Electronic mail and some form of access to re-

Mallach is a faculty member of the University of Lowell and a consultant to user and vendor executives. Based in Needham, Mass., he has published Win Them Ower: A Survival Guide for Corporate Consultant Relations Programs. mote files are now possible.

PC-based file servers are next. These act as central librarians, granting electronic permission to access a file. The better ones control access with finer granularity, so that one user can update John's record while another updates Jane's.

The server may require a deficated system. Performance calls for one in all but the most lightly loaded environments. Some servers can execute batch jobs, notifying the initiating PC when each is done.

For more central power, there are file servers based on multiuser software. Unix is becoming a popular choice. Currently, proprietary alternatives are, as a rule, more mature and more fully developed for this purpose than is Unix.

Giant step

Multiuser file servers also permit true interactive multiuser applications, such as transaction processing with a central database. Its relational database management systems are a giant step up from the hierarchical variety that rules the desktop. Assigning demanding tasks to the central system is a boon to Intel 8088 chip users who are tired of going for pizza while spreadsheets recalculate.

PCs remain available. But new users may not need them at all. Alphanumeric terminals can access multiuser systems as well as a PC can. They can cost less than it costs to attach an existing PC to many LANs. For a few dollars more, they will create

Multiuser software exists for all standard PC tasks. If it's mandatory to run exactly the same application as the PCs — rather than just functional equivalents — some multiuser systems can run Microsoft MS-DOS applications.

It's a short step from a mixture of PCs and terminals to a pure terminal-oriented environment. This is the opposite end of the spectrum from the unlinked PCs with which we started.

All these approaches can satisfy work group information processing needs. Each is ideal for some users. None, despite its advocates' commercially motivated claims, is ideal for every use.

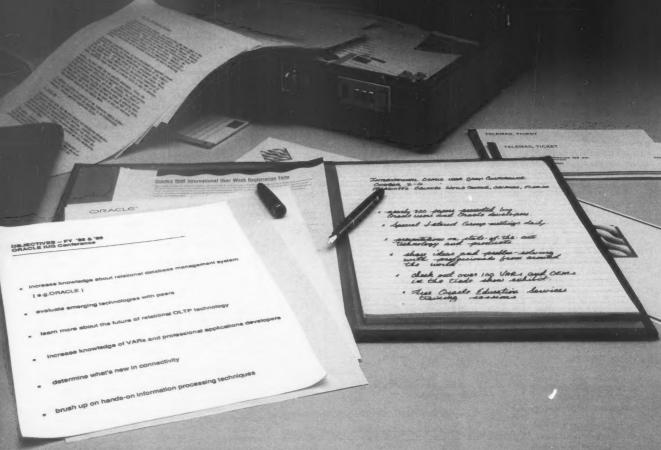
Picking and choosing

The following are factors and questions to consider in judging whether a particular approach is right for you:

 How many PCs already exist in the organization as a fraction of the users to be supported by a proposed system?

How satisfactory are those PCs for current and proposed users? (If the PCs had to be substantially upgraded, they might as well not exist from a cost evaluation point of view).

How willing are users to Continued on page 21



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Mallach

CONTINUED FROM PAGE 19

change their current mode of operation?

 How interdependent are the users?
 Will they share data dynamically or just pass files around?

• How regular is computer usage? If it is low-level and sporadic — as it usually is with managers who occasionally use a small spreadsheet or E-mail — a central system can support more users than its normal rating with resulting cost savings. On a LAN, each user will still need — or at least want — his or her own PC.

→ Is there a need for substantial computing power, such as for large spreadsheets, statistical analyses, complex data summaries or production-line simulation? If the need is regular, powerful personal workstations may be appropriate. If not, the cry for "Intel 80386s all aroundl" is a call to waste money. A central system can supply a great deal of power to any user on an occasional basis.

How about complex graphics? Its frequent use, as in computer-aided design, page layout or preparing professional-quality visual aids, tilts the scale toward individual resources.

 Does the work group communicate regularly with remote systems? Most PCbased LANs can communicate with mainframes. However, they may need an expensive gateway, and proprietary minicomputer software tends to fit into mainframe networks better today. Two-level HERE ARE MANY ways to skin a work-group computing cat. Various approaches can be forced into a specific situation. If this wasn't the case, work group systems could provide even more horror stories than they already do.

transaction processing, for example, tends to work better when minicomputers are at the lower level.

• Who is going to support the resulting system?

What are this person's capabilities?

How does he see dealing with multiple vendors to resolve problems — as technical challenge or total pain? The minicomputer is likely to involve fewer vendors

and fewer complex interfaces among its products.

There are many ways to skin a workgroup computing cat. Various approaches can be forced into a specific situation. If this wasn't the case, work group systems could provide even more horror stories than they already do. A systematic decision process can yield a system that needs much less force-fitting.

Netview

CONTINUED FROM PAGE 18

ers when they put it in that it will not magically work and solve all their problems. The comment "Where's the beef?" in post-installation situation seems to indicate that the user reflexively ordered Netview without fully evaluating it or evaluated it by reading an article somewhere.

Art King Data Communications Specialist Pacific Power & Light Co. Portland, Ore.

Bounty of books

I must take issue with Ashley Grayson's remarks about the scarcity of good computer books [CW, July 18]. He stated: "Don't expect to find books that will inform you of trends or help you choose among alternatives such as Ventura vs. Pagemaker. . ."

There are more than a couple of books on the market that will do exactly that. The best of them is *Desktop Publishing With Style* by Daniel Will-Harris.

That book not only compares those two programs but also covers low-end programs such as PFS: Personal Publisher, Spellbinder and Newsroom. It also compared the big three word processing programs evolving into full-fledged desktop publishing programs and evaluated fonts, printers and all the other necessities that go along with desktop publishing.

I agree that many computer books are simply rehashes of the manuals for people who didn't buy the software, but there are also many good books available.

Wendy Thayer Los Angeles, Calif.

The personal touch

I wish to register my accolades for Dan Woods' article "Living in two worlds: a programmer's lament" [CW, July 18]. It think he captured the essence of the programmer's lament — stradling the technological and the human. I urge Computerworld to take more of the position that publishing this article represented: namely, writing about the very human issues in a very technological business.

It is people who deal with the computers, and I feel the human issues in dealing with technological progress should be focused on more by your newspaper.

Bernie Rhodes Cincinnati



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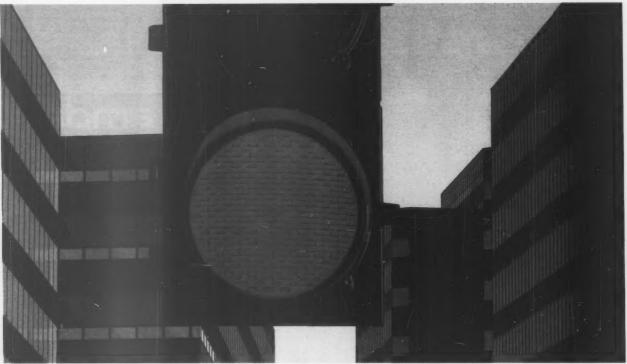
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SYSTEMS & SOFTWARE

SOFT

Thomas O'Flaherty

The software way back

Second of a two-part series

Last week, I described how IBM's software strategy has been too successful in the following ways:

• IBM's dominance in its strategic sectors (database management systems and communications) has held back distributed computing.

 IBM's neglect of computeraided software engineering (CASE) tools and its inhospitable stance toward systems software vendors has slowed implementation of innovative applications.

To the extent that IBM recognizes its software deficiencies, it cites three remedies, one technical (Systems Application Architecture [SAA]) and two business/marketing in nature (application alliances and systems integration).

SAA will greatly reduce IBM's support overheads and may ultimately make life easier for 370-oriented programmers. But the benefits will add layers of translation, thereby substantially increasing operating overheads.

Application alliances

Even if IBM admitted that it will be absorbed in redoing what has already been done, IBM would argue that the ongoing computing needs of its customers are being served by IBM's support of independent applications developers.

This support is a mixture of Continued on page 30

CASE still lagging

ANALYSIS

BY NELL MARGOLIS

Although companies and products continue to flood into the market, computer-aided soft-ware engineering (CASE) is still being preached about more than it is practiced, according to a recent report from Case Research Coro.

The Bellevue, Wash., market research firm surveyed commercial mainframe MIS shops at large companies with regard to current CASE commitment and future CASE intent.

What the company discovered was not only a relative dearth of CASE activity but a low level of what the report called

"CASE preparedness."

The report concluded, "Overall, the market as a whole is in a 'pre-CASE' environment."

Several indicators signaled an MIS establishment anticipating, but not yet ready for, CASE:

Only 13% of the shops surveyed reported an ongoing productivity measurement program. In addition, only 39% of Continued on page 32

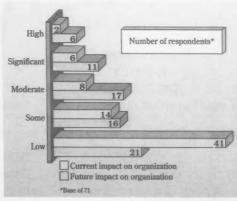
Inside

- Veterans Administration bets on optical disk. Page 27.
 Encore teams up with
- three VARs. Page 27.

 Oracle joins benchmark group. Page 27.

The impact of CASE

A survey of CASE tool users shows that computer-aided software engineering has had little effect on organizational structure so far but is expected to have more in the future



SOURCE: THE CASE RESEARCH CORI CW CHAR

OPERATING SYSTEMS

Pick flourishing on PCs

BY PHILIP J. GILL

ersonal computers have opened up a broad new avenue of expansion for the multiuser Pick operating system, but improvements are still needed if it is to compete in the long run with Microsoft Corp.'s MS-DOS and OS/2.

According to recent market research, the operating system, developed by Pick Systems in Irvine, Calif., and marketed by more than two dozen hardware vendors, has enjoyed faster growth than Unix during the past five years despite its considerably lower profile. From 1982 to 1987, the Pick marketplace enjoyed a compounded annual growth rate of 71%, compared with Unix's 63%, according to Infocorp, a market reContinued on page 28



DEBORAH WITHEY-CULL

Users say M&D cuts data path

BY NELL MARGOLIS

BOSTON — "Whatever game you're in, information is the name of the game," said the systems supervisor at a Fortune 100 company, in town to hear the latest from Natick, Mass,-based financial software vendor McCormack & Dodge.

And with increasing frequency, as businesses become more decentralized and international, users do not want to have to figure out where the information is or go through any complicated steps to access it, said the system supervisor, whose company

Continued on page 32

BIM Spotlight

VSAM processing can be a breeze!

BIM-BUFF is a product which is designed to significantly increase the performance of VSAM in every DOS/VSE installation. It does this by dynamically managing VSAM buffers transparent to all programs, does not alter any VSAM files, and does not make any modifications to VSAM itself. While each installation is different, experience with some DOS/VSE installations has shown potential savings to be astounding. Using BIM-BUFF will result in reduction in VSAM jobs of physical I/O by up to 50%, CPU time up to 20% and elapsed time up to 60%.

Call for full documentation or free 30-day trial.

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BIM has over 20 system software products for improving productivity and use of DOS/VSE, OS, and CICS, and also performs systems programming consulting. Marketing agents in most countries.



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We've Installed 7,500 In this, the fourth consecutive "Year of the LAN," anyone can sell you networking equipment. And will. The sell you networking equipment and will.

But what most companies need is someone experienced in the design and installation of multivendor networks. An objective source to integrate all the different technologies of different companies to work for you.

Which is a very good description of Businessland.

WE'VE SEEN IT ALL.

If this is your first time, networking is a new and exciting idea.

Unfortunately, it's still something of an adventure for a lot of the companies out there doing it.

Having designed, installed and supported well over 7.500 different networks. Businessland has seen and done it all. More than a few times.

WE BRING ALL THE BEST COMPUTER COMPANIES TOGETHER.

Early on, before LANs were popular, Businessland was working closely with our customers, and the major hardware and software companies as an advocate of multivendor solutions.

These ongoing relationships. combined with our technical and service resources give us unique experience and

perspectives in connecting these products. Something most VARs or networking companies lack.

To the point where today, we're installing and maintaining an additional 400 multivendor networks and 4.000 nodes each month for businesses across the country. For smaller businesses as well as Fortune 500 corporations.

WE'LL SHOW YOU HOW.

A lot of people have delayed the decision to connect their PCs. And frankly, we don't blame them. No one has shown them, in terms relating to their business, how they should go about it. How it will benefit business. And how to overcome the perceived risks.

We would like to have the opportunity to do that.

WE COULD WRITE A **BOOK ABOUT YOUR** NETWORK.

If you're up nights over this decision, we recommend our Expert LAN Planner. Even if you don't sleep better, at least you'll have something good to read while you're up.

Expert LAN Planner is a very affordable and popular first step. For less than \$400.

vou will receive a workbook that helps you identify your needs. Then a systems engineer will come to your office, ask questions, observe your operation and put together a book describing the best LAN for you. Including all the specs on hardware and software. And the price, should you choose Businessland to install it.

You'll finally have a good idea of what you're in for.

WE PROVIDE A COMPLETE SUPPORT SYSTEM FOR YOUR LAN AND YOU.

While a network can make incredible things happen for your business, it does demand some attention in return.

Our Gold Plan gives every LAN a support organization of its own. This includes your own Businessland account manager, systems engineer, field service technicians, trainers and corporate technical support. Starting with the pre-networking consultation right through installation, our ongoing support includes remote diagnosis, an 800 phone number called SolutionLine," on-site consulting and regular reviews to assure your network performance.

Multivendor Networks. There To Say? than Businessland to take the risk out of networking. First, we run trials, tests and evaluations on all available

WE EVEN PUT A SERVICE CENTER ON YOUR DESK.

Our new ServiceLine[™] 800 number lets you pick up the phone and immediately access our combined local and national service resources. We can solve a lot of your problems right over the phone. Otherwise, we'll immediately dispatch our local technicians to your office location.

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When it comes to preparing business people to get the most out of their computers, our Businessland educational programs are among the most popular in the business.

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After all. 1-2-3 Release 2.01 has recently been rated the top-performing spreadsheet for an unprecedented fifth straight year by the NSTL? In fact, 1-2-3 is the backbone of business, with over 7 million users who depend on it everyday.

Plus, the upcoming 1-2-3 Release 33 ber 6, 1988; you get a free 1-2-3 Release 3 will be the most powerful spreadsheet on dBase, from within your spreadsheet. the market by far, yet it will offer the familiar 1-2-3 interface and be fully compatible Lotus sales rep for details. with all your present 1-2-3 data, macros and applications.

The new 1-2-3 will offer an exciting

3-dimensional spreadsheet for better organization and consolidation of data. Plus, improved graphics and powerful database enhancements, including the ability to access external databases, like

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(1) Upgrade offer valid September 6, 1988 through 30 days after the 1-2-3 Release 3 ship date. (2) National Software Testing Laboratories, Inc. Software Digest Ratings Report, June, 1988. (3) 1-2-3 system requirements will vary from Release 2.0 to Release 3.1 to 3-8 Release 3 runs under DOS and OS/2; Hard disk and 640K required. Lotus certified compatible PC with 80286 processor or better recommended. Lotus and 1-2-3 are registered trademariar's of Jutus Development Corp. In addition, Take Corporation.

Vets say optical disk will kill piles of paper

ONSITE

BY MITCH BETTS

ST. LOUIS - The Veterans Administration's regional office here has installed a document processing system based on optical disk storage and retrieval at a time when many organizations still consider it to be a technology in the tire-kicking stage.

Based on 26 workstations served by an optical disk jukebox, the system works in a demanding production environment and connects to existing data processing systems.

Mary Frances Levland, depu-

Data View

AS/400 prospects

Industries that currently use IBM System/34s, 36s and 38s represent potential markets for IBM's follow-on machine

Percent of

installed base

20%

Wholesale/

retail

Government

Medical/

ty director of the VA's Vocational Rehabilitation and Education Service, called the system "a startling success." In September, it will be put to the test when the office gets an expected flood of 10,000 applications for education benefits that must be processed using it.

The impetus for the project came in 1984 when a VA executive visited the agency's field offices and was astounded that the staff had to handle so much paper. File folders for individual cases can weigh several pounds, with as many as 20 documents, and the agency was running out of room for file cabinets.

The VA's department of vet-

Agriculture/mining/

construction

17%

Process anufacturing

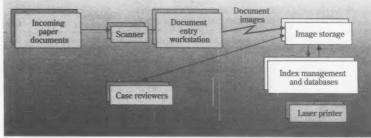
17%

SOURCE: COMPUTER INTELLIGENCE CW CHART

ufacturing.

VA's folderless file system

The Veterans Administration system uses document imaging to handle claims processing



SOURCE: AMERICAN MANAGEMENT SYSTEMS, CW CF

erans benefits decided to develop a prototype optical disk system for one of its smaller programs - the new Montgomery GI Bill providing peacetime education benefits - just in case the project failed. Levland said.

Anticipation

In mid-1987, the VA awarded a contract to American Management Systems, Inc. (AMS), a systems integrator in Arlington, Va., to install the system within five months so the office would be ready for the onslaught of applications. The system was installed in December, two weeks behind schedule, at a cost of \$3 million to date, Leyland said.

The so-called Folderless File System is based on Filenet Corp.'s off-the-shelf Document Image Processor, a storage-andretrieval system that includes file servers and an optical storage and retrieval optical disk jukebox with four drives.

Incoming documents placed in scanners, the digitized image is verified, indexed and stored on optical disks, and the document image is then routed to high-resolution workstations for review and processing.

The scanners, Filenet system

Still in its first few weeks of exis-

tence, the Transaction Pro-

cessing Performance Coun-

cil - created to develop on-line

transaction processing (OLTP)

pledges of the leading relational

database makers. Last week's

entry, relational database man-

agement system giant Oracle

Corp., whose July TPS launch

was one of several OLTP-orient-

ed database announcements that

have focused attention on the

benchmarking issue during the

past several months.

the membership

benchmarking standards

SOFT NOTES

and workstations are linked together by an Ethernet local-area network. The system is integrated with the office's existing financial and word processing systems. Thus, system users can check financial payment records and write letters to seek more information from claimants. Leyland said.

AMS provided custom applications software to match the agency's claims processing procedures and to integrate the optical disk system with the existing mainframe applications.

Even distribution

Leyland cited the following benefits of the system:

- Managers can distribute the cases to examiners rather than allowing the examiners to pick just the easy ones. They can also ensure that no case gets too old.
- · Files are easy to find, do not get lost and can be viewed by more than one person at a time. Workers handling phone inquiries can quickly provide answers about the status of a case.
- The work flow software can enforce policies and procedures and control access. The system also provides managers with statistical reports on productivity

and the age of cases.

Next year, the system is exected to handle an estimated 25,000 cases, and by 1990 the caseload may reach 82,000 as the Montgomery GI Bill program grows, Leyland said.

The VA plans to finish a costbenefit study of the project next April and decide whether other veterans benefits programs should get optical disk systems in the early 1990s, Leyland said.

Although the system is heralded as a paperless office, officials acknowledged that the incoming paper documents are not destroyed after scanning. And they sheepishly acknowledge that laser printers have been added to make occasional print-

Leyland explained that the agency is retaining the paper documents because the VA's general counsel is not vet certain that documents stored on optical disk are legal evidence in court. "Eventually we hope to mail the documents back ... or destroy them," she said.

"There was no way that we could destroy the paper in a prototype environment. After all, it could have failed," said Elinor Hunter, the project manager.

HARD BITS

EDP

Finance/

and loan

4%

5%

Firms tap Encore line

Encore Computer Corp. signed three value-added reseller agreements recently. New additions to the Encore team are Versys Corp. in San Francisco, Northeast Data Systems, Inc. in Burlington, Mass., and Eakins Associates in Mountain View, Calif. The agreements cover the complete product line of Encore systems, including the Multimax 310 and 320 parallel processing systems.

Honeywell Bull, Inc. signed a deal with Dataguard Recovery Services that will supply the disaster recovery company with a DPS 8000/82 mainframe and 16 MSU3380 storage subsystems. Honeywell estimates the sale at

Dataguard provides disaster recovery services exclusively to Honeywell Bull customers.

Texas Instruments, Inc. recently added several service programs to its TI-Care Support Services. Some of the new services are Data Recovery, which assists customers who have lost access to data due to tape drive or disk problems; Media Conversion, which helps customers handle data conversion between TI and non-TI systems; and Disaster Protection Services, which can include such features as off-

marketing of a color graphics Continued on page 30

The Computer Virus Industry Association recently selected three universities to conduct testing and evaluations of antiviral measures to be marketed by association members. The schools are Adelphi University, Pace University and Sarah Lawrence College. John Cordani, deputy commander of the U.S. Army Information Systems at the Pentagon, will act as chairman. The program will use a combination of available viruses as well as simulated environments to determine the effectiveness of each product.

Oracle added to benchmark council

Mitchell Management Systems recently announced that IBM will exclusively market its line of project management tools. The two companies signed an agreement earlier this year

According to Mitchell, IBM will announce within the next few months the Enterprise Management Control Series and the Enterprise Management Control Series Advanced Function

The Oracle relational DBMS from Oracle is now available under the IBM VSE operating system. Oracle can now boast that its DBMS runs under all three mainframe operating systems. The release will range in price from \$20,000 for the 9370 Model 20 to up to \$176,000 for the high-end IBM 3090s.

Apollo Computer, Inc. said it will make available Nexpert Object, an expert system shell made by Neuron Data, Inc., on its personal workstation platform, Nexpert Object is a C language-based system that uses a graphical user interface, which is said to make the system easier to use for those with little artificial intelligence background.

6%

site systems at a TI location and periodic off-site backup protec-Chromatics, Inc. and Integrated Solutions, Inc. signed a deal for joint development and

Pick

FROM PAGE 23

search firm in Cupertino, Calif.

And while the Pick market's growth rate is expected to cool somewhat between 1987 and 1992, falling to 19%, it is still comfortably ahead of the industry growth rates "for years to come," according to Infocorp multiuser microcomputer systems analyst Jeanette Sill-Holeman.

That growth portends a dramatic shift in the Pick market-place. Mini vendors pioneered the Pick market 15 years ago, and many of the same vendors still dominate it today, including McDonnell-Douglas Computer Systems Corp., Prime Computer Corp., The Ultimate Corp. and General Automation Corp.

Market trends indicate that "the growth is bimodal," Sill-Holeman explains. "It's coming at the low end, for PC systems priced at less than \$12,000, and at the high end, for large mini systems priced at \$100,000 and others."

By 1992, Infocorp projects those two categories of systems will compose one-half of all Pick sales, up from one-third in 1988 (see chart above).

Times a-changin'

Times have indeed changed for Pick. In the last two to three years, the operating system's licensees have begun to exploit the price/performance advantages of low-cost high-performance IBM Personal Computer AT-compatible PCs for use as multiuser systems.

In fact, to the people at Pick Systems, aggressively pursuing Pick on PCs was a do-or-die decision. Steve Kruse, Pick Systems' vice-president and general manager, acknowledges the changing hardware dynamics of the Pick market but indicates it had to come if the Pick community as a whole was to survive.

"People have so many choices now," Kruse says. "They could go with a Unix solution on a PC, in which case they'd never become a Pick user at all."

According to Kruse, the traditional Pick market took all of its 15 years to reach an installed base of 110,000 systems, predominantly minicomputers, that supports a community of one million users.

In contrast, Kruse says, Pick on PCs is taking off at a much faster rate. In three years, the number of Pick systems based on PC AT-class hardware platforms has grown from zero to a total of 30,000.

Moreover, Kruse adds, the company ships 1,000 to 1,500 new Pick systems for AT and compatible platforms each month. Kruse says the Pick PC implementations are helping to expand the Pick community by bringing in users who might have

otherwise looked elsewhere for a solution.

Pick PC users are divided roughly half-and-half between those who are new to the Pick system and those who are already running the Pick system on larger hardware platforms, he

The new-user Pick PC system supports nine users on average, Kruse says, while the old, established users putting Pick on PCs are generally looking to take advantage of lower hardware costs to port down their applications or to support smaller work group and distributed applications, such as retail point-of-sale (POS).

For example, a major West Coast women's fashion retailer has installed a nationwide network composed of more than 200 Pick PC systems as local



Universal Brands'

POS platforms. The company's MIS manager spoke on the condition that neither she nor the company be named.

According to its MIS manager, the firm chose PC Pick systems because it already had a Prime minicomputer running the Prime Information System (PIS), a Pick-compatible operating system. The PC-based Pick systems support branch store POS applications and report daily sales and merchandise reports into a larger host system at head-quarters, aiding in sales reporting and inventory control.

Perfect match

For the sales and marketing team at Chase Manhattan Bank's Personal Banking Services Group, Pick on PCs was a perfect match between capabilities and performance. Two years ago, the group installed the New York-based bank's first Pick systems on AT compatibles from Compaq Computer Corp. The group markets the bank's services to "high net-worth individuals," according to Vijay Rajguru, assistant treasurer in the sales and marketing program.

The bank chose Pick, he says, because it was looking for a multiuser system that provided easy access to data. The major application for the system, he explains, is keeping track of current and potential clients for the

Predicted market for Pick-based systems by system price In the next few years, the value of Pick-based systems will grow most at the low and high ends

0	Worldwide market value in millions						
System price in thousands	1987	'88	'89	'90	'91	'92	CAGR*
Up to \$12,000	\$93.6	\$137.6	\$185.6	\$234.1	\$284.0	\$331.9	28.8%
\$12,000 to \$25,000	\$181.1	\$197.8	\$248.6	\$318.9	\$383.3	\$455.8	20.3%
\$25,000 to \$50,000	\$331.6	\$442.2	\$465.9	\$593.1	\$652.9	\$684.9	15.6%
\$50,000 to \$100,000	\$232.3	\$307.4	\$434.9	\$601.5	\$672.9	\$722.9	25.5%
\$100,000 to \$200,000	\$237.9	\$321.4	\$345.5	\$367.3	\$383.6	\$412,1	11.6%
\$200,000 to \$350,000	\$36.6	\$119.3	\$144.7	\$161.2	\$177.5	\$196.2	39.9%
More than \$350,000	\$205.7	\$186.2	\$264.2	\$307.1	\$337.3	\$367.2	12.3%

* Compound annual growth rate

SOURCE: INFOCORP CW CHART

bank's services, including checking accounts, personal and commercial loans and other offerings.

"We looked at Unix at one point, but it didn't have the applications we needed," Rajguru says. "Pick just solved our problem right away."

In fact, Raiguru says the Pick PC systems have proved so successful at solving the sales and marketing department's problems that other departments within the group, such as mortgage marketing, have installed them as well. There are 10 Compaq AT compatibles currently scattered throughout the group, each of which supports about 10 users, he says.

For all their devotion to their cause, Pick users are surprisingly realistic about its limitations. For instance, the West Coast retailer says Pick "is a business system for interactive applications" but adds that it is not a good operating system for num-



Infocorp's Sill-Holemon

ber-crunching or batch applica-

John Powers, data processing manager and Pick user at beer distributor Universal Brands, Inc. in Miami, adds, "You're not going to design jet fighters on Pick."

He and other users have a short but definite list of improvements, most of which have not changed much in the past two years or so.

"We have to go outside Pick to solve our communications and file system problems," says Charles Seelig, director of data processing at Wearguard Corp. The Norwell, Mass., clothing manufacturer uses a Prime minicomputer running PIS to support the firm's manufacturing, inventory and mail-order distribution functions.

Seelig says Wearguard gets around Pick's communications and file system limitations by utilizing those same facilities in Primos, the native Prime operating system that resides underneath PIS.

Pick wish list

Other users are not so fortunate and list better communications and more sophisticated office automation tools such as those available under DOS and Unix as action items for the Pick hardware and software vendor community.

At Chase Manhattan's Personal Banking Services Group, Rajguru explains that the Pick system is fine for generating preset form letters, but its word processing capabilities are so limited that any letters that require customization are handed over to secretaries to type out on typewriters.

Two years ago, Universal Brands, among the Southeast's largest beer distributors, moved its Pick-based warehousing and inventory management applications from a Honeywell DPS 6 - with value added by Ultimate - to cheaper, more cost-com-petitive Altos Computer Systems, Inc. 3068 supermicrocomputers. But Powers says his firm still does word processing on DOS-based PCs because the Pick system's offerings in that area are so limited. He says he wants better word processing capabilities so that data on the Pick system can be used to generate word processing mail lists and similar applications

Powers says he also would like to see more graphics for the Pick operating system. Currently, all of the upper-level executives at Universal Brands have ATs on their desks instead of Pick terminals because the PCs provide the decision-support graphics they need.

"ATs do a superb job at word processing and graphics," he says. "Pick [only] does an ade-

quate job."

One possible remedy to Pick's shortcomings is a co-resident Pick and Unix System V operating system. Edge Computer



Wearguard's Seelig

Corp. in Scottsdale, Ariz., Sequoia Systems Corp. in Marlboro, Mass., and software house V-Mark, Inc. are among several Pick licensees considering such a strategy. Infocorp's Sill-Holeman says she believes that because of the complementary strengths of Pick and Unix in certain areas, companies pursuing this dual operating system approach are on to something. "It may be the best of both worlds," she says.

Other solutions to the problems with Pick are being addressed as standards issues by the Spectrum Manufacturers Association (SMA), a San Diego, Calif.-based trade association whose membership is composed exclusively of Pick-based systems vendors.

However, little unanimity has been reached on standards as Pick Systems promotes its latest open-architecture version as a standard and SMA publishes its recommendations on various Pick modules.

"Users are really driving the standards movement," Sill-Holeman points out. "They don't want to necessarily be tied to one vendor. It's up to each vendor to individually address its users' concerns. The users should keep pushing the Pick vendors toward standardization."

Gill is a San Mateo, Calif.-based freelance writer.

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Call us at 1-800-DATAGEN. Or use the special reply card on page 49.

O'Flaherty

CONTINUED FROM PAGE 23

general encouragement, technical assistance, co-marketing and, in a few cases, IBM-relabeling and direct selling. The establishment of DB2 interfaces and SAA conformance have recently accounted for much of the IRM and third-party interaction

While these application alliances generally serve useful purposes, the concept is undermined as the independents see that IBM really has some areas, such as manufacturing, reserved for itself and that IBM may play favorites, for example, acquiring rights to Hogan's banking software.

A larger problem is that application packages, no matter how complex and op-tion-filled, are often not the best means of constructing complex, interlinked systems for large enterprises.

Systems integration

IBM has addressed these application package limitations by offering systems integration services; that is, it will build and select application software, select hardware, sometimes even non-IBM hardware, and install networks. IBM has become one of the dominant systems integration players in addition to such firms as Electronic Data Systems Corp. and Arthur Andersen & Co.

Systems integration is taking off in the commercial sector, not only because of vendors' industry and project management experience, but because sys-tems integration addresses underlying software problems:

· Systems integration vendors are and often developers - of CASE tools.

· Micro-to-mainframe connections and other networking, usually ad hoc, are key components of many systems integration projects.

Systems integration will, however, not make in-house development go away.

Real solutions

SAA, application alliances and systems integration are, at best, partial solutions to IBM's software problems. At worst, they divert the attention of IBM and its

customers from real solutions.

'Real" solutions will need to mobilize the additional imagination and resources that even IBM has found to be a limiting factor. This will mean turning to thirdparty system software vendors

The last time IBM turned to third parties was in developing the open-architecture Personal Computer. This was a win-win-win situation for IBM, its customers and the industry as a whole. Discouragingly, IBM has been devoting much of its recent efforts to closing this architecture and, perhaps coincidentally, slowing PC growth.

To my mind, IBM's opportunity lies in developing system software alliances, which would include the following:

· Open specifications to its key products. This includes, but goes further than, simply making source code available and includes detailed statements of direction. Encouraging add-ons and extensions to such key products as DB2. Currently, these are discouraged by IBM's control of specifications and the fear that IBM will make sudden changes in direction.

 Ceding portions of the system software spectrum in which there are already adequate non-IBM products.

Does this mean that IBM has to roll over and play dead? Not at all. If IBM really does have a better mousetrap — for example, DB2 — then let it kill off a generation of mice. The DB2 mistake was in making it difficult for other vendors to make improvements or add-ons quickly; this limited the real-world use of DB2 and slowed down new system development. IBM hardware sales were perhaps the biggest loser.

Would IBM make such changes? Isn't a closed architecture one of the fruits of its antitrust victories? But, remember, IBM is bottom-line driven: There has been a good correlation between fairly open, but IBM-dominated, software standards and IBM growth.

O'Flaherty is director of research at Broadview Associates, an information technology mergers and acquisitions firm in Fort Lee, N.J.

Hard bits

CONTINUED FROM PAGE 27

display that uses a real-time development system. The agreement will involve the blending of Integrated Solutions' realtime development platform with Chromatics' high-resolution graphics display system.

Nixdorf Computer Corp. recently won a contract that will supply Marshall Field & Co. with the Nixdorf retail automation systems. Marshall Field will install the systems, the 8812 Point-of-Service terminals and processors, at 25 of its department store locations.

The first implementation began last month at a Marshall Field store in Chicago. Nixdorf estimates the deal at \$6 mil-

Sun Microsystems, Inc. opened a manufacturing facility in Westford, Mass., for its Sun386I family of workstations

The Sun 386I line was designed at the company's East Coast Division in Billerica, Mass. The Westford facility will use a manufacturing system based on its own file servers and programmable logic controllers over a Sun network.

"Are your DB2 tables growing out of control?

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M&D

CONTINUED FROM PAGE 23

requires him to remain anonymous: "You just want to hit a key and get it."

Users cited Millennium, M&D's software environment that offers application integration and hardware portability, as a boon to their growth strategies in the age of distributed computing and global busi-

Nevada, Iowa-based Donnelley Marketing literally could not account for its growth without the software advantages offered by M&D software, manager of financial systems Bob Carlson said.

"About five years ago," he said, "our old, homegrown financial systems had be-

come so antiquated that some of them weren't able to handle figures of more than \$1 million." The rapidly growing company, which now has some 2,000 employees, "looked at MSA and all the others, but nothing could compare with Mc-Cormack & Dodge in terms of overall integrated software."

Donnelley runs Millennium on an IBM mainframe, Carlson said, and — courtesy of M&D's PClink interface — on the company's many personal computers. In addition, he said, "our central data center has a VAX, so the fact that Millennium is coming to the VAX is going to give us extra flexibility."

Opting for M&D turned out to include an accidental strategic kicker for Carlson. Soon after the decision was made, Dun & Bradstreet Corp., which owns Donnelley, acquired M&D. "Boy, did I look smart to the boss," Carlson said.

M&D software is helping Westinghouse Electric Corp.'s Nuclear Fuel Division look smart, too. Early this year, in an effort to coordinate between four and eight official company databases and other "informal" ones into one integrated database system, Westinghouse installed four M&D manufacturing software modules to aid its reactor product line, senior engineer Damon E. Haley Jr. said.

Although it is early in the game, Haley said, "the software is already improving our accuracy. We're looking to do a lot more withit."

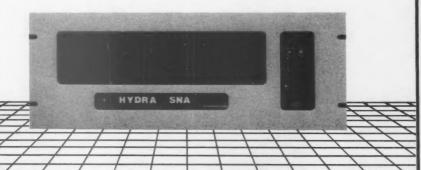
American Savings & Loan Co. in Stockton, Calif., is relying on M&D's human resources/benefits and payroll software to keep its employees more involved in the company's business, accounting manager Chris Ross said.

"We're turning away from hard-core programmers," said Ross, whose company believes its goals can be better furthered by employing business-oriented people hoping to pursue career paths within the organization.

However, he added, they still have to be able to use the automation tools, without which efficiency — and competitive edge — would be lost.

"I'm not technical," said Ross, who was trained on M&D software at his previous post. "The fact that American Savings & Loan has it [M&D software] is one of the reasons I came here."

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CASE

CONTINUED FROM PAGE 23

those with a program were shown to be using function-point analysis, generally considered the state-of-the-art measure, according to the report. In fact, an equal share, 39%, reported use of "an old and highly outmoded measure: lines of code."

• While most shops have invested in some kind of data dictionary — a critical building block of a working CASE system — some of these are passive data dictionaries, which do not enforce the rigorous updating that reflects ongoing programming changes and makes for effective CASE. Moreover, 42% of the survey respondents had no data dictionary at all.

• CASE relies on graphics and quick response time, which point toward personal computers and PC workstations as necessary hardware platforms. Forty percent of the Case Research survey respondents, however, reported ratios of 12 or more developers to each PC in place. A mere 15% of the surveyed shops provided each developer with a PC.

• Market figures, the report said, imply a saturated database management system market; the Case Research survey results, on the other hand, indicate that if the market figures are correct, a lot of DBMSs are gathering dust. Less than 50% of the respondents said they use a DBMS for more than half of their applications; slightly more than 25% are using a DBMS for more than 75% of their applications, according to the report.

Also on the discouraging side, the report found relatively few shops using any formal analysis and design methodology and all too many continuing to underestimate the need for training — some 70% of the respondents said less than 25% of their programming staff had been trained on CASE tools. The survey showed companies anticipating a 100% rise in effort devoted to in-house CASE training.

The case for more attention to training was perhaps most eloquently stated, not by any of the numbers, but by the user who returned the following apology with a postdeadline survey sheet: "I didn't get this done on time because I was at the CASE Symposium last week trying to learn about all this."

The report reaffirmed the promise of CASE, both the technology and the marketplace. The leading reason for shying away from CASE, the survey showed, is its newness; reasons two and three are lack of budget and unstabilized methodology, according to the report. None of these barriers is insuperable.

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Rod Bosscawen, Senior Vice President, NCNB National Bank of North Caroline Data General is the official technical computer sponsor of the United States Olympic Committee. 36USC380

USA

In less than 30 days from date of order, Data General computers were processing 10,000 loans for NCNB National Bank of North Carolina.

With nearly 600 branch offices, NCNB National Bank of North Carolina is one of the largest banks in the southeast, and among the top 20 in the country.

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NCNB chose Data General to help set up the system. And Data General responded.

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The NCNB system was so user-friendly, it required only a

The NCNB system was so user-friendly, it required only a minimum of training for the bank's personnel to operate it proficiently.

In no time, they were servicing loans, processing payments and receivables in a way that exceeded all expectations.

Says Rod Bosscawen, Senior Vice President at NCNB:

"Data General's ability to respond quickly and provide support on a broad-based front helped NCNB establish a loan-processing operation in record time. Without their commitment and performance, the accomplishment of this would have never

and performance, the accomplishment of this would have never been possible. We are extremely impressed."
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NEW PRODUCTS - HARDWARE

Processors

McDonnell Douglas Computer Systems Co. has expanded its Series 18 line of superminicomputers with the addition of the Series 18/600.

The product is a mid-range high-volume transaction processing system, the vendor said, and is designed to run under McDonnell Douglas' proprietary Reality operating system.

The operating system on the Series 18/600 comes bundled with a proprietary operating system shell that reportedly features mainframe-class security, inqui-

ry prompts, on-line Help and intelligent batch processing.

The Series 18 processors support up to 127 microsystems and offer communications controllers that support IBM's synchronous or Systems Network Architecture devices.

The Series 18/600, with 4M bytes of memory, two 150M-byte disk drives and 32 ports, costs \$199,000.

McDonnell Douglas, 17481 Red Hill Ave., Irvine, Calif. 92714. 714-250-1000.

An image-processing system that provides on-line access to archived data at

the workstation level has been announced by **Design Data Systems**, a Rockville, Md.-based systems integrator.

Called Image/One, the product was designed as an alternative to paper files microfiche and microfilm. According to the vendor, authorized users can scan, edit, store, retrieve and print documents with Image/One. Both images and text are captured, automatically indexed and stored on removable 12-in. optical disk platters.

The system is composed of a 32-bit Data General Corp. minicomputer, either a Hewlett-Packard Co. image scanner or a Palantir Corp. compound scanner and integration and database management software from Design Data. Optical disk storage, workstations and a laser printer are

also provided.

Image/One is priced from \$200,000 to \$300,000 depending on system configu-

Design Data Systems, 7630 Standish Place, Rockville, Md. 20855. 301-424-7870.

Data storage

A series of fixed 5¼-in. drives that provide formatted data storage capacities ranging from 2.2G to 8.9G bytes is now available from System Industries.

Dubbed the **Quad Pac** family of data storage products, the devices can reportedly be interfaced to any digital distributed systems architecture controller. The units feature a modular design that minimizes the footprint and increases ease of use, the vendor said. The series is scheduled for availability this month.

The Quad Pac family is priced from \$50,000 to \$250,000 depending on capacity, host connections and quantity. They will be offered in a variety of cabine configurations including standard highboy, tape housing, and lowboy styles.

System Industries, 560 Cottonwood Drive, Milpitas, Calif. 95035. 408-432-1212.

I/O devices

Hewlett-Packard Co. has announced the HP 7600 series Models 240D and 240E electrostatic plotters. The plotters are the latest addition to the company's line of computer-aided design and engineering output devices.

The plotters reportedly produce typical architectural, engineering and construction (AEC) and mechanical-engineering drawings in less than one

minute's time.

The Model 240D features a 406 dot/in. line resolution that was designed to create plots on "D" size media. The device costs \$22,900.

The Model 240E is available for "E" size output and costs \$27,500. Both units incorporate HP-GL, the HP graphics language, and also include HP-GL/2.

According to the vendor, the products will meet the needs of mechanical-engineering and AEC-mapping companies or departments that generate more than 25 plots per day.

plots per day. HP, 3000 Hanover St., Palo Alto, Calif. 94304. 415-857-1501.

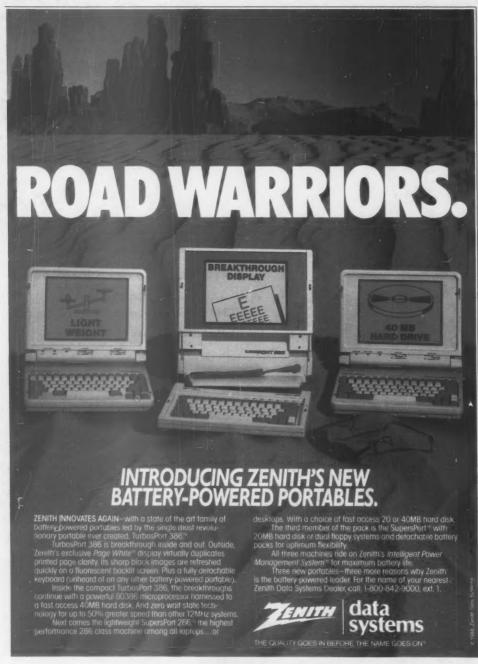
Power supplies

A standard power supply that provides fault-tolerant and customized multioutput voltages and currents has been announced by **Powertec**, Inc.

The modular Model 6D Multimod system can provide up to 15 outputs, ranging from 2V to 48V DC with a maximum combined power of 1,500W. Modules are available in single-, double- and triple-width units. The product reported y measures 5 by 8 by 13½ in., and the mainframe enclosure can hold up to six standard, single-width power-supply modules. Features include soft-start, overvoltage protection and overtemperature shutdown.

Prices vary depending on number of modules and output configuration. In 50piece quantities, the price of a 5V/240A, 12V/25A, 12V/12A and 5V/5A supply is \$1,495.

Powertec, 20550 Nordhoff St., Chatsworth, Calif. 91311. 818-882-0004.



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Melinda Thomas, Executive Vice President & Chief Operating Officer, National Safety Council

The National Safety Council begins its 75th year of service with the help of Data General computers.

The National Safety Council's continuous goal is to prevent the life and health threatening conditions that face both industry and the public.

Year by year, these conditions change. But the Council's experience reveals that change itself must be integrated into everyday habits for life-saving progress to be made.

Through its 100 affiliated local chapters and 12,000 member

Through its 100 affiliated local chapters and 12,000 member firms nationwide, the Council responds to changing safety and health needs. And Data General is providing the computer technology to keep pace.

Melinda Thomas, Executive Vice President and Chief Operat-

Melinda Thomas, Executive Vice President and Chief Operating Officer, explains:

"From a total solutions standpoint, Data General offers simplicity in terms of integrating the components of computer processing—office automation, communications, data management, applications—into one environment. We required systems that could be installed, maintained, and upgraded easily. And that could interface, via industry standards, smoothly with other vendors' products. Data General provides us with cost-effective solutions that work."

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NEW PRODUCTS - SOFTWARE

System software

Syllogy Corp. has announced Release 1.5 of Cobol Express, a compiler control system. The software reportedly enables users to recompile only the parts of their programs that have been modified since the previous compilation.

Release 1.5 has been extended to support various system productivity products, including Pansophic Systems, Inc.'s Panvalet, Computer Associates International, Inc.'s CA-Optimizer, Viking, Inc.'s Librarian and others. Operating system environments supported include IBM's

MVS, MVS/XA, CICS and Cullinet Software, Inc.'s IDMS.

Cobol Express Release 1.5 costs

Cobol Express Release 1.5 costs \$8,500 for a three-year license fee and \$10,500 for a permanent one.

Syllogy, One University Plaza, Hackensack, N.J. 07601. 201-343-8900.

Computer Associates International, Inc. announced recently that CA-Optimizer/Cobol Migration Option (CMO) Version 1.0 has been released for beta testing.

According to the vendor, the software was designed to convert existing OS/VS Cobol programs and copybooks into

IBM's VS Cobol II Release 2.0. Features reportedly include an on-line Help facility and high-level macros that provide customization capabilities. The product runs under the MVS and MVS/XA operating systems.

CA-Optimizer/CMO is priced from \$20,000 to \$28,000, depending on configuration

Computer Associates, 711 Stewart Ave., Garden City, N.Y. 11530. 516-227-3300.

Development tools

Cadre Technologies, Inc. has announced Teamwork/Ada, an integrated tool set for Ada design automation.

According to the vendor, the product

will increase productivity by enabling designers to take a high-level view of complex Ada systems, break them down into manageable components and allow a development team to refine the design components concurrently.

The tool also includes templates, which automate DOD-STD-2167/2167A documentation, the standard format required on most U.S. Department of Defense-related development projects. It will be available in either a stand-alone configuration or as an add-on module to other Teamwork products. The product is scheduled for release in September.

Teamwork/Ada will cost from \$3,500 to \$8,500.

Cadre Technologies, 222 Richmond St., Providence, R.I. 02903. 401-351-2273.

Languages

Unify Corp. has announced an extension of its Accell fourth-generation language development system.

The extension adds the graphical interface of Microsoft Corp.'s Windows to Accell-built Unix applications, the vendor said. Called Accell/CP for Windows, the product offloads presentation processing from the Unix host computer onto Microsoft MS-DOS-based personal computers to achieve improvements in system performance and user productivity. The product is available on most major computers running under Unix and Unix-compatible operating systems.

compatible operating systems.
Accell/CP for Windows costs from \$2,995 to \$120,000, depending on hard-

ware configuration.
Unify, 3870 Rosin Court, Sacramento,
Calif. 95834, 916-920-9092.

Applications packages

Candle Corp. has released Gen-A-Pic for MVS, a product that generates a hard-copy diagram of IBM's MVS/XA and MVS 370 system hardware configurations.

The software reportedly simplifies the process of adding, deleting or moving system devices from one channel to another by visually representing the relationship between control units, I/O devices and the channels of a configuration.

The diagrams can indicate volume serial numbers and can be customized to include titles, comments or notations. No system modification is necessary for installation.

Gen-A-Pic for MVS costs \$5,000. Candle, 1999 Bundy Drive, Los Angeles, Calif. 90025. 213-207-1400.

Utilities

Touch Technologies, Inc. has released Version 1.1A of the Dynamic Load Balancer. The program was designed to balance system resources on Digital Equipment Corp.'s mid-range VAX systems.

The primary enhancement in Version 1.1A is a bias option, which allows system resources to be allocated on a priority basis, biased toward either CPU-bound or I/O-bound processes. The program reportedly runs on VAX machines of all sizes. Dynamic Load Balancer 1.1A costs \$1,495 per VAX computer. Additional licenses cost \$1,195.

Touch Technologies, Suite 220, 9990 Mesa Rim Road, San Diego, Calif. 92121. 800-525-2527.



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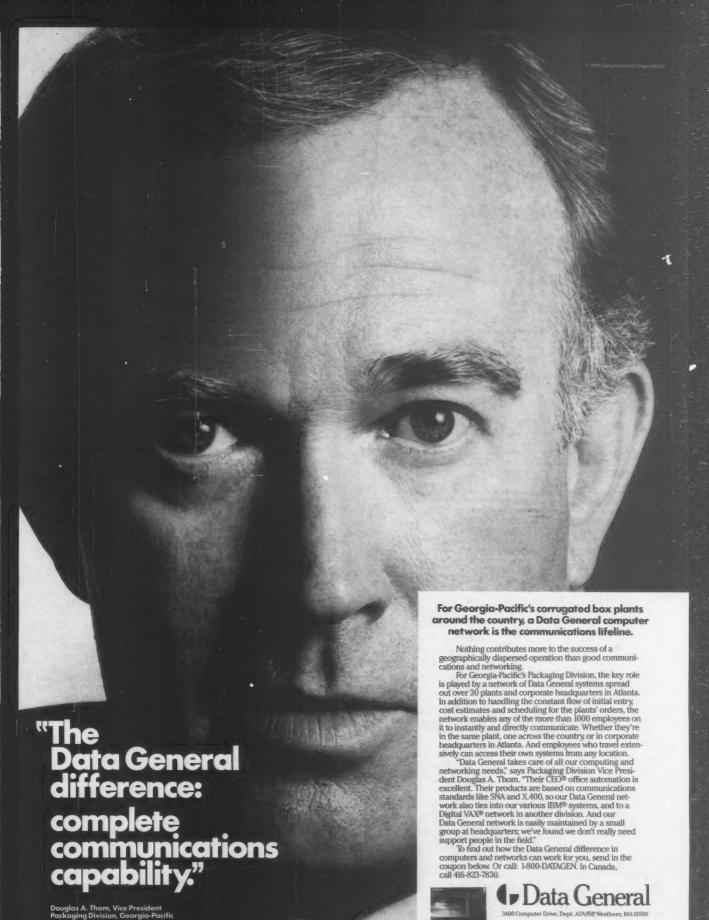
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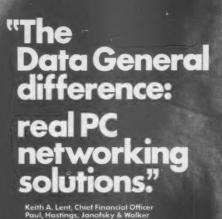
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According to Keith Lent, PHJ&W's Chief Financial Officer:

"DG/PC*I has been an excellent way to increase productivity, decrease costs and time delays, and better manage our firm's information. Having it saves the cost of sending packages by overnight mail, reduces the amount of paper generated and enables information to be more accurate. It seems as though DG/PC*I was created with us in mind."

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Michael Alexander

How are you doing?



When Mayor Ed Koch is out schmoozing with his constitu-York, he often asks them,

'How am I doing?" I'll bet that Koch probably doesn't like the answers he gets most of the time, especially these days. Still, the mayor knows that he has to ask the question.

I decided to ask nearly a dozen MIS managers if they ever go out to rub elbows with their constituents - that is, personal computer end users - and ask, 'How am I doing?'

Almost to a man - there was only one woman in the group - they replied that it simply isn't something they ordinarily

"You can't ask end users how well you're doing or even if there is something that you can do for them," one manager told me. "You'll only get more problems than you can handle, so why build expectations unnecessari-

Why indeed? I have a hunch that most MIS managers don't want to hear the answer, so they never ask the question. The truth is, they don't want to confirm what they already suspect:

Continued on page 44

Microsoft scrambles to head off runaway mouse with Word rewrite

BY STEPHEN JONES

REDMOND, Wash. - Some users of Microsoft Corp.'s Mouse pointing device have found a new variation on the old adage, "When the cat's away, the mice will play."

In this case it's mice that go berserk - something the Microsoft support people are calling the "wild-mouse syndrome."

Users running Microsoft's Mouse and Word 4.0 software

tem/2 computers have inadvertently sent Mouse on a wild spree by hitting an uncommon combination of keystrokes and clicks. The results include a variety of unwanted windows being opened and system freezes where the user cannot get into the command line.

"It goes a little nutty," said Jeffrey Sanderson, Microsoft's group product manager for word

Microsoft said that, with the

problem to be with the PS/2's mouse port when the mouse was used to point and click with Word. Sanderson said the problem was spotted last February when users started to complain about the wild mouse.

In all, Microsoft received about 200 calls from users that had an encounter with the rowdy device. Microsoft made a slight modification to Word to quiet Mouse and began shipping the new version, called Word 4.00A,

While Microsoft said that Word was the only part of its applications software line that experienced the problem, one user said he had similar difficulties when running Xerox Corp.'s Ventura Publisher.

"Sometimes the wild mouse Continued on page 42

Inside

- Intel's O'Dell: A PS/2 chip
- tale to tell. Page 41.
- For California students. IBM's PCjr lives. Page 41.
- Informix Software en-
- hances DBMSs. Page 41.
- Diagonal Data displays bar-code products. Page 48.

Two companies, two vastly different PC policies

General Cinema's systems manager confronts need to build bottom-up support for PC system

BY MICHAEL ALEXANDER

Perhaps the most difficult step in putting personal computers on desks of workers at the bottom of a company is gaining the confidence in the technology of managers at the top.

Ron Glover. manager of systems and programming at General Cinema Corp., headquartered in Chestnut Hill, Mass., has been grappling with setting up a

formal policy that will enable him to clear this formidable hurdle. "General Cinema," he says, "is

at the bottom of the personal computer integration scale." In four years, the company has acquired only 95 PCs — not many for one of the nation's largest theater-chain owners and softdrink bottlers.

While the company's top managers aggressively

quire significant stakes in a variety companies. they are cautious even conservative - when it comes to acquiring PCs.

Any capital expenditure that is more than \$1,000, including microcomput-Continued on page 42

With support from the president on down, Bose forges plan for corporate wide PC proliferation

BY MICHAEL ALEXANDER

Bose Corp. is a clear example of how a company can rapidly integrate personal computers into the working environment when top management is committed to the notion.

The Framingham, Mass.based maker of home and car loudspeakers and other audio gear has put 250 PCs, nearly all of them Apple Computer, Inc. Macintoshes.

on its desk tops within the past two years, according to Warren Harkness, director of corporate

information systems at Bose.

"We could not have installed that many PCs in that time if they had not been Macintoshes," he says. "They're easier to use and require less MIS support," compared with Microsoft Corp. MS-DOS-based PCs,

according Harkness

All of the company's vice-presi-dents and 70% to 80% of all its executives use Macintoshes, includ-Bose President Sherwin Greenblatt.

whom Harkness describes as a "black belt of PCs" Continued on page 42

How Micro Focus COBOL helped the U.S. auto industry get up to date with Just-in-Time Manufacturing

In 1984, Ted Annis and Gail Jackson founded Supply Tech to develop software that would provide communication of business documents between parts suppliers and the major U.S. automakers.

With the release of its ST1 product, Supply Tech had the cost-effective application that suppliers needed to service the Big 3 automakers' mandate for Electronic Data Interchange (EDI) software to make Just-in-Time manufacturing possible.

Annis and Jackson agreed that COBOL was the right choice as their development language. "When used properly COBOL lends itself to self-documentation which means easier implementation and maintenance.

Jackson, Supply Tech's President and head of product development, was already familiar — and dissatisfied — with another COBOL. But Micro Focus COBOL had the mainframe COBOL commands they needed. "Micro Focus also offers additional capabilities standard routines so that you can do most things in COBOL that you can usually do only from a lower-level language," Jackson notes. "And no matter how technically sophisticated they are, our mainframe programmers just go crazy over the Micro Focus Editor and ANIMATOR."

Supply Tech's new STX12 product is a generic EDI system that is opening up new markets for the company Productivity increases from Micro Focus COBOL have made it easy for Supply Tech to expand its product line.

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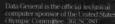
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Gene Anderson, Group Vice President, Corporate Services, Southern States Cooperative, Inc.

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They are also a Data General value-added reseller, market-

ing a retail-store computer system to other agricultural cooper-

atives throughout the U.S. and Canada.
What made Data General so vital to Southern States? "They deliver," says Southern States Group Vice President, Gene Anderson. "For VARs, nobody puts it all together like Data General. They offer a full range of VAR marketing and mer-

chandising services, including conversion assistance, start-up programs, demo development policies and more."

Data General is committed to delivering to VARs. Plus, our open systems architecture and adherence to industry

our open systems arcinitecture and agnerance to industry standards, delivers greater flexibility to VAR customers. Adds Anderson, "Data General's products, level of service, and the availability of their people up and down the line are better than the competition."

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SMALL

Douglas Barney

Let them eat vaporware



Vapor everywhere, but not a bite to eat. Vaporware. The very word makes stomachs tighten and lips

curl. And the companies that announce products and build expectations, only to ship eons later, deserve our sneers.

It could be worse. Most of us have packages that do the job; we just want something better. Just imagine if the Vapor Lords that rule today's software companies ran something really important, like a supermarket. Then we would really be in trouble.

Instead of Stop & Shop, it would be just Stop. Trying to get groceries would be tougher than writing the worst C language routines.

Picture a housewife or househusband who goes to the store looking for a gallon of milk promised six months ago.

"Hey grocer. That milk in

"Milk. Oh yes, the milk. Well, you see, I mean, uh, it, well, it is almost done. The cow is in, ah, final stages of delivery. Should be ready early next week."

"OK. So there's no milk. How about that steak. You promised that would be ready by the beginning of this year."

"Did I say this year? I really meant this fiscal year. For us, that doesn't start until next year."

"What are we supposed to eat?"

The grocer smiles. "Well, I can get you a nice can of beets, but you might want to wait. The company is coming out with a better version."

Continued on page 46

Intel talks about PS/2-compatible role

INPERSON

The IBM Personal System/2 chip-set marketplace is heating up, even if the PS/2-compatible market is not.

Chips and Technologies, Inc. and Western Digital Corp.'s Faraday Electronics division were considered the two leading contenders for the IBM Micro Channel-compatible chip-set sweepstakes.

Then came the news that the first PS/2-compatible machine — from Tandy Corp. — would be built around a chip set from none other than Intel Corp. in Santa Clara, Calif.

So far, however, PS/2 compatibility is all talk and no action — neither Tandy's, nor Dell Computer Corp.'s PS/2 lookalikes have hit the stands yet. Dell pulled back on its plans, while Tandy units have only trickled out. Meanwhile, users are still wondering what Micro

Channel is all about. Is it, as *The Wall Street Journal* implied, just another marketing term, like Colgate-Palmolive Co.'s MFP?

Āfter several months of silence, Intel is finally starting to discuss its role in the burgeoning chip-set market. *Computer-world* recently interviewed Ted O'Dell, product marketing manager of peripheral components at Intel's Folsom, Calif., division.

Why is Intel getting into the PS/2 chip-set market?

The chip-set market has grown significantly over the last several years and has funded a lot of start-ups like Chips and Technologies. When we looked at the Micro Channel opportunities, we saw there were no market leaders other than IBM.

There was an opportunity for us to focus, to be the first and to be the market leader. Chips and Technologies has the AT market, Western Digital the XT market — and here was a place where we could catch up.

How does Intel's chip set differ from those designed by Chips and Tech-



O'Dell comes clean on Intel's PS/2 chip set

nologies and Western Dig-Ital?

Comparisons are difficult to do on a detailed level. Generically, our chip set works with both the 386 and the 386SX, and I don't know about the competition on that. Our chip set is architected and partitioned the same as IBM's.

We understand that Western Digital changed the partitioning around quite a bit. When you're dealing with new design and new technology based on IBM silicon, compatibility is very tricky.

There's not a large body of Micro Channel knowledge that exists, so you want to be cautious in getting too creative. So we did our partitioning in a similar fashion to IBM.

Our chip set was designed to work with our 82385 cachememory controller, which allows higher performance than the IBM Model 80 while using less expensive DRAM [dynamic random-access memory]. We paid careful attention to the timing compatibilities, so we will be 100% compatible in timing. We

Continued on page 44

Users exploit Informix memory

Word conversions

Relational programs expand to 16M bytes, can run simultaneously

BY MICHAEL ALEXANDER

MENLO PARK, Calif. — Users of Informix Software, Inc.'s SQL database products are eagerly exploiting the added memory capabilities of Informix-SQL, In-

If you have Ashton-Tate's

Multimate with an Epson

LQ2500 printer and are not

getting the top margin you specified, edit the PAT EPLQ2500. Go into Ad-

vanced Utilities. Edit an Old

PAT. Go into Vertical Move-

ment. Enter the code 0D at

formix-ESQL/C and Informix-4GL. Also, Microsoft Corp. MS-DOS releases of Informix-4GL Rapid Development System and Interactive Debugger are being offered for the first time.

The four packages feature an extended memory option that al-

Set Page Length in Inches.

should be cookin'

Make sure you save the

Information provided by

Corporate Software, Inc., a

Westwood, Mass.-based soft-

PAT with the same name, and

reset the printer. Now you

lows users to exploit up to 16M bytes of memory on Intel Corp. 80286- and 80386 micros. The programs' applications and database engines can be run separately or simultaneously in extended or real memory.

"We can embed the database engine into our way of doing things," said Dave Dyer, director of software engineering at Pate Engineering in Houston. Pate, a developer and value-addreseller, uses Informix-SQL, Informix-4GL and Informix-ESQL/C in expert systems for flood control and wastewater management.

"It is important for our users to feel that they are within one large, all-powerful application," Dyer said. "Informix allows us to do that without loss of power."

Portability from DOS to Unix was key in selecting Informix-SQL and Informix-4GL, said Bob Goldman, computer systems

manager at the New York City Human Resources Administration. The agency has only limited access to a Unix-based system but is planning to install another system.

"We're waiting for approval,

Informix-4GL Rapid Development System; Informix-SQL

Prices: \$1,495; \$795

 Requires 640K bytes of RAM and hard disk drive
 Requires PC-DOS 3.3, MS-DOS 3.1 or higher

but it is a lengthy process because of all of the red tape involved," Goldman said. "The only way we can get around it is to do our development work in DOS and then port our applications to Unix."

The agency has developed two database applications using Informix-4GL on an IBM Per-

Continued on page 46

Failed PCjr gets high marks as prof

BY JULIE PITTA

HAYWARD, Calif. — Although IBM's PCjr is considered to be one of IBM's more notable failures, a group of California students are finding that it is helping to put them on the road to success.

When Valerie Helgren-Lempesis was assigned to direct the California State University at Hayward's reading clinic for grade-school children this summer, she sought an alternative to a traditional classroom structure.

Helgren-Lempesis, an assistant professor in the department of teacher education, wanted a tool that could interact with disadvantaged kids with reading difficulties. As a Silicon Valley educator, it did not take her long to figure out that personal computers using voice synthesis could fill the bill, she said.

For kids who are used to failure, a PC is "a machine that never gives up on them. It's patient. Also, kids have a certain fascination with computers," she said.

In researching her project, Helgren-Lempesis became acquainted with a local IBM representative, who helped the clinic become eligible for IBM's writing-to-read program. IBM installed nine PCjrs in the California State Hayward reading lab. Each PCjr is equipped with a speech attachment for interaction with students.

For two hours each day, the

students were tutored with the help of the PCjr. A typical task was phoneme drills. Phonemes are the sounds that comprise words. The computer's voice box would repeat phonemes to students hooked up to the computer via headphones. After hearing the phonemes that make up a particular word, the students were asked to type the word into the computer.

Talking to reading

"The theory behind the program is 'What I can talk about, I can write about; and what I can write about, I can read,'" HelgrenLempesis explained. To end each day, students composed a short story on the PC.

Although the writing-to-read program was designed for kindergarten and first-grade students, Helgren-Lempesis said it proved ideal for the clinic's children, who although older, were as much as two grade levels behind in reading. The 17 students in the summer program ranged from age six through 12.

"I don't think computers are ever going to replace teachers, but they're great tools. The kids made great progress," Helgren-Lempesis said.

Courier uses Mac to refit jets

BY JULIE PITTA

MEMPHIS — Apple Computer, Inc.'s Macintosh will soon be earning its wings as a computer-aided design (CAD) machine by helping Federal Express Corp. redesign passenger planes for use in delivering packages.

Once they are flying their delivery routes, the planes get another assist from the Macintoshes as they monitor the planes' maintenance.

The Airline Operations Division at Federal Express, which redesigns the planes, is the firm's most enthusiastic Mac user. Its staff uses 350 Mac Pluses, Mac Ils and Mac SEs and only

20 Microsoft Corp. MS-DOS-based personal computers.

Russell Chatham, project engineer for the industrial and automation engineering group in the division, said his unit is a highly technical one, made up of mechanics and aeronautical engineers who nevertheless are not computer literate. "The Mac is very easy for them to learn to use." he said.

A shortage of suitable cargo planes has forced Federal Express to do its own alterations on passenger planes. In the past, the Mac has supported the engineering process in the reconfigurations; next month, Macintoshes will be used for the actual redesign of the planes.

Chatham said Federal Express expects to standardize on Versacad, a widely used CAD program for MS-DOS systems currently available on the Mac from Versacad Corp. in Huntington, Calif.

Maintenance records for the Federal Express fleet of planes reside on a database on an IBM 4300 mainframe located about 2½ miles away. Nearly all the Macintoshes in the division are connected to the mainframe so that records can be accessed by individual users or work groups within the division.

A Netway 1000A cluster controller from Apple third-party supplier Tridata Corp. serves as a gateway to the mainframe. In addition, the division has standardized on Farallon Computing, Inc.'s Phonenet with a star conrroller and the Localtalk wiring scheme. To facilitate exchange

FEW YEARS ago, there weren't enough products. Now there's really no problem connecting a Mac to a mainframe."

RUSSELL CHATHAM FEDERAL EXPRESS

between work groups, the division networks within a "zone" using the Appletalk network. Work groups can exchange data through the use of Phonenet and Localtalk.

Chatham said the division has been pleased with Tridata's product. Through the use of Netway 1000A, the user can access data from the mainframe and copy and paste it onto the Mac interface.

Chatham said he believes Apple has made advances in communications. "A few years ago, there weren't enough products. Now there's really no problem connecting a Mac to a mainframe." he said.

At first, Federal Express was reluctant to purchase communications tools from little-known third-party vendors. Like many software buyers, it was concerned it would commit itself to a package and then the supplier would go out of business. Chat-

ham explained.

General

FROM PAGE 39

ers, must be personally approved by top management, for example, and the approval process can be lengthy at times, according to Glover.

"I have been trying to get the PC above the clerk level where management sees it and into the executive suite," Glover explains. "It would be a tremendous win if I could do that."

If PCs could be moved into executive offices where their benefits could be made more readily apparent, Glover is convinced that the integration of PCs throughout the corporation could be effectively and easily implemented.

For now, however, "it's a psychological process," Glover says. "My boss sees me writing a memo by hand and thinks it's OK. But if he sees me looking at the screen of a terminal, he tells me that I am not supposed to be looking into a tube. Meanwhile, that handwritten memo goes to a secretary, it gets typed, it comes back to me for corrections and then it gets retyped."

While integrating microcomputers into the corporate culture has been difficult, Glover says that it may be only a matter of time — six to eight months — before standards will be established for acquiring and using

In fact, Glover is already in the process of setting up a localarea network in human resources. "It's a pilot program that I want to make sure works before attempting to expand it," he explains.

A successful implementation of the network will go a long way toward boosting management's confidence in using PCs in other key departments. "Setting standards will be key to our success" in bringing PCs into the organization in an orderly fashion, he

"The biggest problem I will face is trying to get department heads to put a line in their budgets for PC purchases. They are not going to want to do it, because those executives will want to know what the big expense is for." Glover says.



General Cinema's Glover

Developing standards for the orderly acquisition and installation of microcomputers is a constantly evolving process, he says. In addition to gaining the support of top management, Glover says he believes that a successful strategy hinges upon developing an end-user culture that will make the most use of PCs once they are installed.

"People here are not that knowledgeable about PCs," he said. "They know that they will make their work easier, but they must also be able to justify the purchase and outline the payback

Though MIS has yet to establish a formal training program, Glover concedes one will be required to support a comprehensive PC program.

Training and support is currently being provided by a group of employees who help set standards for personal computer programs and assist co-workers with using PCs. "They're PC junkies, but their activities are extracurricular [the group meets after hours] and not sanctioned by the company," Glover says.

Bose

FROM PAGE 39

because he uses them at every opportunity in the office and while traveling.

The organization's top executives each had MS-DOS-based PCs in their offices, but the machines went unused, largely because they were too difficult to learn, according to Harkness. Eventually the machines were relocated to someone else's office or borrowed for use in another department and never returned.

The move to Macintoshes began when one executive started bringing his Mac to the office from home. The other executives saw how easy it was to use and decided that they wanted one of their own. It took off from there, Harkness says. The executives put a "stamp of being OK" on using PCs.

In addition to manufacturing loudspeakers, Bose also makes a version of its popular Roommate loudspeakers for use with the Mac and the Apple IIGS. That connection contributed to executive acceptance of the machine, Harkness notes. Bose marketing executives absorbed the Apple culture when they were working at Apple on the speakers, he saws.

says.
"The executives saw what
they [Macintoshes] can do,"
which further fueled their appetites for the machines, Harkness
explains. "Now marketing is the
heaviest and most proficient
user of Macintoshes."

Part of the furniture

Using PCs is so firmly entrenched at Bose that they are viewed as being personal support gear, like furniture, according to Harkness.

"There are no secretaries and few administrators. If you want a letter written you have to do it yourself," he says.

While using Macintoshes may



Bose's Warren Harkness

result in less work for some staffers, it is becoming increasingly challenging for MIS to handle technical support and training for an ever-broadening base of computer users, Harkness says.

The company is increasingly turning to the more technically astute users, whom Harkness calls "brown belts of PCs," to assume more of a supporting role. Though assisting their fellow employees in handling the basic computer skills is not part of their job descriptions, they are the front line of support, Harkness and the state of the state o

ness savs.

MIS also maintains a training facility where employees are taught beginning and advanced applications on both Macintosh and MS-DOS-based micros.

Another room has been set aside for end users to work on either a Mac SE or Hewlett-Packard Co. Vectra.

There, users who have but an occasional need for a PC can work on certain tasks and try out both machines to determine which one they want to install on their desk tops.

Microsoft

FROM PAGE 39

takes over and it just goes crazy," said Tim Davis, a senior project engineer with Hughes Aircraft Co. Davis encountered the troubles while running Word and Ventura Publisher on a PS/2 Model 60.

Davis said that Microsoft told him it would take care of the Word problem but that he would have to go to Xerox for help with Ventura Publisher. He was able to exit the program under Word and save the document, but he lost Ventura Publisher files that were on the screen when Mouse

began to act up.

Sanderson said there is a chance that the problem could occur with other vendors' programs if the same rarely used keys were tapped, but he did not know of any other difficulties.

Another wild-mouse sighting was made by a user at a Big Eight accounting firm, who said that he had hit a shift key and clicked the mouse to copy a block of text and "the thing took off like it had a mind of its own."

Microsoft said that any Word 4.0 user who bought the product before May and has encountered the mad mouse can request a tamer upgrade from the compa-

ny.



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Is there really a market now for PS/2 chip sets? There doesn't seem to be much interest in IBM's Micro Channel at this time, let clone a competitor's.

It's taken off a little slower than we would

have liked. Buying goes in cycles - you don't really buy into new technology until you need something new, so that delays the market to a certain extent. Also, since there are no compatibles on the market right now, that's delayed it as well.

The interesting thing is that the Micro Channel is doing quite well in Europe, and that's because a lot of people there are making first-time buys, so they're buying for the future.

What other customers does Intel have for the chip set? How many customers signed up for it?

We can't comment on that. We are in limited production now and are shipping production quantities, but I can't say beyond Why has intel kept a low profile until now about its chip set?

We kept a low profile until about a [month] ago. We wanted to focus on satisfying our customers as opposed to making a lot of public statements to the press.

In an effort to focus, you spend your time getting chips out, working with customers, etc. It takes time to talk to the press, and the first focus was on custom-

Isn't Intel getting itself into a mar-ket that's already pretty crowd-

We intend to be the leader in that market. If it's overcrowded, hopefully that will be somebody else's problem. We intend to be the leader.

Alexander

FROM PAGE 39

They are not doing as good a job supporting end users as they should be. Perhaps it is as one MIS manager said: They know that there is precious little they can do about it.

This was only one of many questions I posed to MIS managers at a broad sampling of companies, academic institutions and other organizations last month.

I was surprised by how consistent the MIS managers were in their views of enduser computing and related subjects. If MIS managers are not talking to their end users, it may be that they are busy talking to one another.

Demilitarized zone

Quite a few managers conceded that their jobs were stressful because they walked a corporate DMZ between end users and top management. One manager called it a "no-win situation." And at least two managers said to me that their jobs required the reflexes of a fighter pilot - one even joked that the cup of coffee and cigarettes that seemed to be always at hand were a "fighter pilot's diet."

Keeping up with changes in technology is one of their most difficult challenges, some managers pointed out. Others said that PCs are changing the corporate culture faster than they ever suspected was possible and that they just can't keep up.

But their biggest concern was the relationship between MIS and end users. Nearly every manager conceded that his department could be doing a better job of communicating with users and handling their concerns. It's just that they are not doing much to improve that relationship.

The day-to-day logistics of running a data processing center, setting standards, acquiring equipment and software and all the other related tasks leave little time to handle the more mundane work of supporting end users, one manager said.

Compounding the problem is the fact that the base of PC users in most organizations continues to broaden, but resources for training and support do not. One manager noted that the complexity of support also increases as end users become more sophisticated.

Ironically, the advanced PC end users are taking on more of the work that was once considered the responsibility of MIS. They're downloading information from mainframes to PCs and creating the reports they need rather than having MIS do it, for example,

End users are also finding ways to support one another, usually drawing on the expertise of the more computer-savvy workers within their department. The astute MIS managers recognize that these internal consultants can be a valuable resource and are cultivating them to play more of a supporting role to MIS.

Several managers observed that perhaps the most important issue is how to establish a better working relationship between the end-user community and MIS. They also worry about what that relationship will be like in the future.

I'll be writing about that relationship now and in the future. Write or call me from time to time and let me know how I'm doing.

Alexander is a Computerworld senior editor, microcomputing.

What you

And what it really is.

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Barney

Oracle hits micro big time? Despite critics who say an Oracle database management system on a personal computer is like a jet engine in an MG you know, real powerful but almost impossible to use or maintain and liable to rip your axles

off — the company is gaining on its PC competitors. Two different Oracle sources say the firm is now selling PC DBMS products at a rate edging close to \$30 million per year.

Clearly, users are not upgrading from very easy-to-use products like Symantec's Q&A to Oracle. Instead, Oracle shops are developing host applica-tions on micros, and high-end developers and consultants are taking a look at this new style of relational DBMS, which just happens to have been around for about a decade.

Darn software must ship The hype started in April 1987. That was when the world heard about this thing code-named Lotus/DBMS that was aimed at turning a staid micro DBMS

market on its ear.

For those who ignore stories about such vapor, Lotus/DBMS combines a back-end server with an array of graphical front ends such as query tools, report writers and 1-2-3/G, a graphical version of the renowned spreadsheet program.

Although the market has yet to see the tanned hide or hair of Lotus/DBMS, sources assure

us it is coming. Elite users and some analysts and vendors have spotted demos of the beast running under Presentation Manager. These lucky few expect a second-quarter 1989 ship date for many components, but eyes roll when asked if 1-2-3/G will ship alongside.

Who wrote DOS 4.0? A while back, this column asked the question, "Who really wrote DOS 4.0, IBM or Microsoft?" According to a source who got several beta releases while DOS 4.0 was in development, the answer is kinda both.

Apparently, IBM started the project and got it near completion but had only developed an awkward front end for dealing with file copying, creation and deletion. In steps, Microsoft cleaned up the front end and made it more in line with the Presentation Manager and IBM's Systems Application Architecture.

According to the source, you could actually see DOS 4.0 start to look good when Microsoft took over.

Barney is a Computerworld senior editor, microcomputing.

Informix

FROM PAGE 41

sonal Computer AT compatible. The first application is used to monitor burial claims for people who required public assistance: the second is used to track child neglect and abuse cases.

Carnegie-Mellon University's principal use of Informix-SQL and Informix-ESQL/C is under Unix on a distributed environment of several thousand workstations and PCs, said Bill Arms, supervisor of academic services. "Students and faculty use the system to create experimental databases," Arms said. We have a separate database engine on network services and a very nice user interface."

Informix-SQL has several tools for building database applications, including a menu creation facility, interactive schema editor and SQL query and data definition language. Informix-ESQL/C enables programmers to use SQL to access and manipulate databases from their programs. Informix-4GL was designed for building complex, customized database applications without having to resort to C or Cobol development.

Pricing is \$1,495 for Informix-4GL Rapid Development System and Interactive Debugger and \$795 for Informix-SQL. Both are slated to be available in the third quarter, Informix said. The DOS versions of Informix-ESQL/C and Informix-4GL are \$595 and \$995, respectively. Both will be available in the fourth quarter, Informix said.

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And, while reports said other market data broadcast systems slowed to a crawl or ground to a halt during October's Black Monday, Data General systems kept Standard & Poor's Ticker IIIT able to feed nearly 3 million messages with zero delays or down-time.

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NEW PRODUCTS

Systems

Diagonal Data Corp. recently introduced bar-code software and hardware for its Micro Maint maintenance management software package. The product was developed with the intention of allowing users to electronically scan inventory and work-order data.

The bar-code software interfaces with Micro Maint's inventory and work-order files to automatically generate bar codes that correspond with numbers assigned to parts, equipment and work orders in the

The system utilizes an Intermec harcode scanner and a handheld collection device with up to 512K bytes of randomaccess memory.

The Bar Code Turnkey package can be used with IBM Personal Computers and compatible systems as well as IBM System/36 minicomputers.

The software is priced from \$1,500 to \$2,500; hardware ranges from \$2,000 to \$3,000.

The total price of the system is dependent on how the individual system is con-

Diagonal Data, P.O. Box 2242, Lakeland, Fla. 800-237-7669.

Software applications packages

Autodesk, Inc. has announced another release of its Autocad package

Release 10 will reportedly feature complete three-dimensional wire-frame construction and surface-modeling capabilities. The package also has been extended to include new drawing, viewing and database features. Release 10 will also run on Apple Computer, Inc.'s Macintosh II systems. The Macintosh implementation of Autocad will operate under the Macintosh Multifinder and support the standard Macintosh windowing environment and desk accessories. Autocad Release 10 costs \$3,000.

The company has also upgraded Au-

tosketch Version 1.04, an entry-level computer-aided design package, to offer support for the IBM Personal System/2 environment. This release will provide Autodesk Device Interface (ADI) support for all peripherals, according to the ven-

Earlier Autosketch programs offered ADI support for digitizers and pointing devices exclusively; Version 1.04 adds support for graphic displays, plotters and

Autosketch Version 1.04 costs \$79.95. A speed-enhanced version costs \$99.95

Autodesk, 2320 Marinship Way, Sausalito, Calif., 94965. 800-223-2521.

Software utilities

A random-access memory-resident program that allows the user to find, display and edit database information is now available from Cauldron.

The Hummingbird Browser incorporates pull-down windows and pop-up menus and is said to be 100% compatible with Ashton-Tate Corp.'s Dbase data and index files. The package will permit the user to open as many as 10 files simultaneously, each with multiple indexes, and display each file in a separate resizable window. Users may update the database without leaving their original application.

The Hummingbird Browser costs \$99. Cauldron, 3204 Adeline St., Berkeley, Calif., 94703. 415-654-3361.

A software menu manager and editor designed for use with stand-alone laptop and portable personal computers has been announced by Connect Computer Co.

Microscope is a subset of the menu system in Connect's Lanscope network management software. It allows standalone PCs running Microscope and networks running Lanscope to use identical menu formats. The software allows users to create custom menus and includes color capabilities. It requires a PC running Microsoft Corp.'s MS-DOS 3.0 or higher. Single-copy license fees for Microscope are \$59 per PC.

Connect Computer Co., Suite 270, 9855 W. 78th St., Eden Prairie, Minn. 55344, 612-944-0181.

Board-level devices

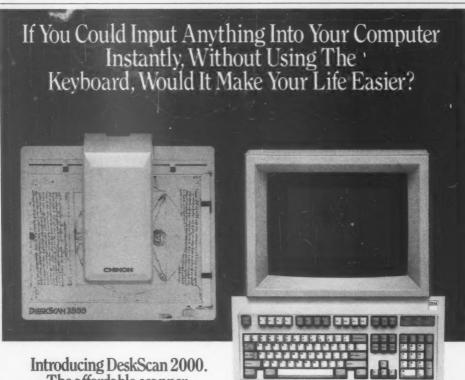
AVR Systems has announced an integrated IBM Personal System/2-compatible system that was designed for graphics imaging, desktop publishing and optical character recognition.

Called the Megabuffer/2, the interface card was developed specifically for the IBM Micro Channel Architecture bus. When used in conjunction with Version 3.1 of AVR's Megascan text and imaging software, the product is said to function as a scanner interface, laser printer controller and memory buffer for PS/2 and compatible systems.

The Megascan 3.1 software and Megabuffer/2 card are available together as the Megascan I system or as components of the Megascan II system Both versions are available for the IBM PS/2, Personal Computer XT, PC AT and com-

The Megascan I system costs from \$1,295 to \$1,495; the Megascan II sys-

tem costs from \$2,695 to \$2,895. AVR Systems, 2201 Qume Drive, San Jose, Calif. 95131, 408-434-1115.



The affordable scanner from Chinon.

Chinon's unique new scanner could change forever the way you use your computer. With OCR software, it scans, digitizes and inputs text into your computer so that you can edit it with almost any word processing software. That means no more retyping of documents. Just think how much time that could save you and your staff!

DeskScan 2000 also scans images, so that you can input graphics too. Then you can manipulate these images with desktop publishing or graphics software.

Best of all, DeskScan 2000 is much lower priced than most effective scanners. That means it's finally costeffective to put a scanner on every PC user's desk.

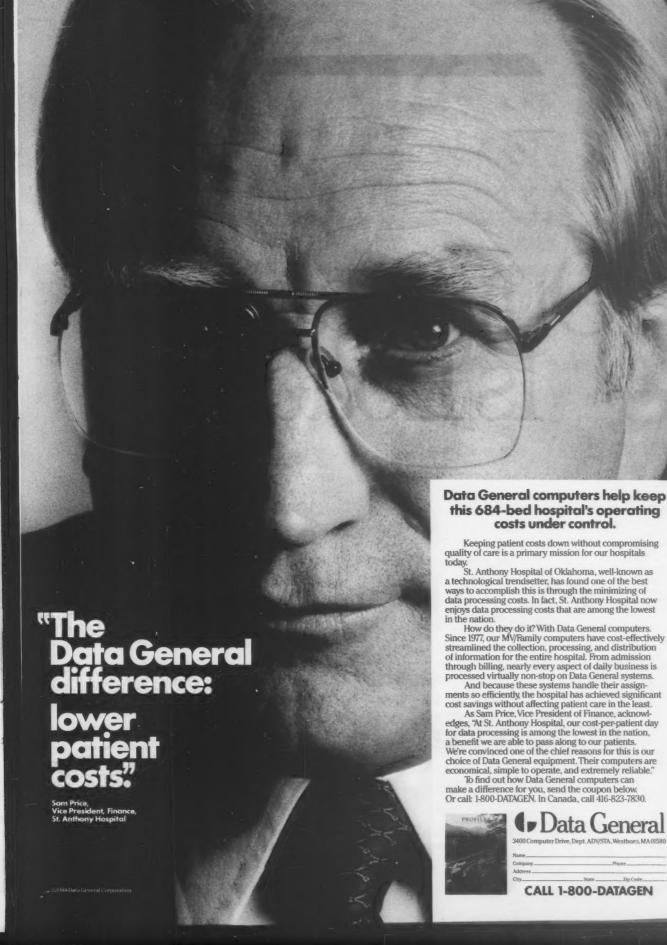
DeskScan's unique overhead scanning design means that you no longer have to separate pages from documents to feed them through a scanner. The document stays still while the scanning head "reads" the page. And the unit automatically adjusts for room lighting levels.

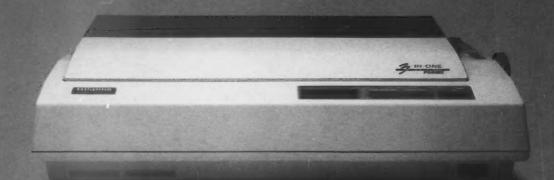
Scanners aren't just for desktop publishing any more. DeskScan 2000 becomes an economical FAX, with the simple addition of an inexpensive add-in board. Chinon sells this exciting option and others in package combinations of bundled hardware and softwareso that you have an affordable way of getting started with your scanner right away

So see for yourself what DeskScan 2000 can do for you. Call TOLL FREE 1-800-441-0222 TODAY for the DeskScan 2000 dealer nearest you.



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NETWORKING

DATA STREAM David Passmore

SNA or X.25? Have both



Many organizations are wrestling over which of two types of transport networks to implement

when planning a wide-area data network - an IBM Systems Network Architecture (SNA) or X.25 packet network.

This dilemma is often considered to be an either-or decision that comes down to a company's networking needs. SNA is perceived to be a proprietary standard, while X.25 packet switching is seen as an interna tional standard suitable for use in multivendor environments.

But things get more complicated with organizations that have a significant amount of SNA traffic but must also support substantial traffic volumes between non-SNA systems. For economic and operational reasons, these users may prefer to avoid implementation of separate but geographically overlapping SNA and X.25 networks.

Fortunately, the two standard types of communications can be combined into the same network by either of two methods: operating SNA se over X.25 to support IBM host communications on a packet network, that is, using IBM's NPSI product and Synchronous Data Link Control (SDLC) packet assembler/disassemblers; or running X.25 virtual circuits over SNA to support non-IBM host communications on an SNA

Continued on page 62

EDI shreds federal paperwork

BY MITCH BETTS

WASHINGTON, D.C. - Electronic data interchange (EDI) is doing more to reduce government paperwork than the misnamed Paperwork Reduction Act ever did, according to agency officials and analysts.
The U.S. Customs Service,

for example, is trying to gain maximum electronic linkage between its headquarters and the import community, using its **Automated Commercial System** to exchange trade data.

'The paperless environment for cargo clearance is clearly obtainable," claimed Jayce Jayce Fortwangler, a senior database consultant at the Customs Service. "Eventually, there will be no hard-copy forms involved in the entry of merchandise into

can use EDI to send entry forms to the agency and get clearance for certain shipments before the ship ever reaches port.

For Customs, this also means that millions of dollars in duties and fees can be sent quickly to the U.S. Treasury Department, where they can start earning interest rather than waiting days or even weeks for paperwork to

Spend money to make it

Ironically, it is budget cuts the face of increasing work loads - that are forcing the move toward EDI at federal agencies, said James F. Kerrigan, director of federal market research programs at Input in Vienna, Va., and other experts.

In an era of fiscal streamlining, agencies are searching for methods to eliminate paperprove public services and reduce transaction turnaround time. Kerrigan said.

Consequently. government demand for EDI services will grow from \$97 million in fiscal 1987 to \$196 million in fiscal 1992, an average annual growth rate of 15%, according to Input.

Much of this growth is expected to come from defense spending, now that the U.S. Department of Defense has officially embraced EDI. In June, Deputy Secretary of Defense William Howard Taft IV signed a directive that promises to make EDI the standard way of conducting business with the Pentagon by the early 1990s, standardizing on ANSI X12.

The department got its EDI start in the transportation field with a pilot program run by the Continued on page 58

PCLANs gain net managers

BY ELISABETH HORWITT

The local-area network management market, all but nonexistent two years ago, has been gaining momentum with a raft of new products in the past year - including announcements in the past few weeks from Data General Corp., start-up LAN vendor Alantec and Cabletron Systems,

Inc.
"Now that companies are starting to actively network hundreds of PCs, they need network management tools to pinpoint the problems," said Mark Cartier, MIS director at Los Angeles law firm Paul, Hastings, Janofsky & Walker.

DG has announced the DG/Sniffer Protocol Analyzer, which is said to provide real-time monitoring and debugging for the vendor's DG/Personal Computer Integration (DG/PCI) communications platform.

The law firm signed on as a beta user because it wanted to better manage its growing DG/PCI network, Cartier said. The firm "started to see the need for the Sniffer" when net-

Continued on page 60



BY JEAN S. BOZMAN

CHICAGO - To ensure fast connections between 1,000 personal computer users, the law firm of Sidley & Austin has became the first commercial installation of AT&T's 10M bit/sec. Starlan network.

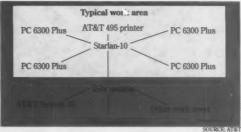
A year ago, the 1,600-employee law firm was using IBM Selectric typewriters as its primary means of creating documents. Secretaries worked separately, revising legal documents through the use of add-on memory cartridges. A word processing group using IBM 5520 dedicated workstations worked three shifts to catch up with the flow of words

After years of studying its office automation needs, Sidley & Austin decided to install 1.000 IBM Personal Computer-compatible AT&T 6300 Pluses and 6312s and tie them together with AT&T's Starlan-10 net-

work, which supports 10M bit-/sec. transmission over twistedpair telephone wiring. The network, which was installed Continued on page 62

Sidley & Austin's twisted-pair network

Starlan-10 links AT&T PC 6300 Pluses locally; AT&T's Information System Network switch provides remote voice and data connections



Inside

- ISO protocols implemented. Page 55.
- ANSI drafting channel standard that would top current speeds. Page 58.
- Doctors prefer Novell. Page 60.
- PCs can talk to System/36 and 38s. Page 63.

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With the AT&T 6500 System you can instantly transfer data between windows, thereby transferring data between sessions or hosts. By eliminating the communications "Tower of Babel," the 6500 System lets users concentrate on the tasks that really matter.

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 Ability to add up to 32 synchronous devices, including PCs, displays, printer controllers, and printers.

· Ability to add up to 32

asynchronous devices, including minicomputers, PCs with async emulation packages, displays, and modems for dial-in.



Multi-host, multi-tasking windows. Users can bring data from multiple hosts (or multiple sessions with the same host) into four multi-tasking windows – all regardless of the type of host accessed.

• A choice from nine different types of displays. (Four are plug compatible with IBM 3270 controllers.)

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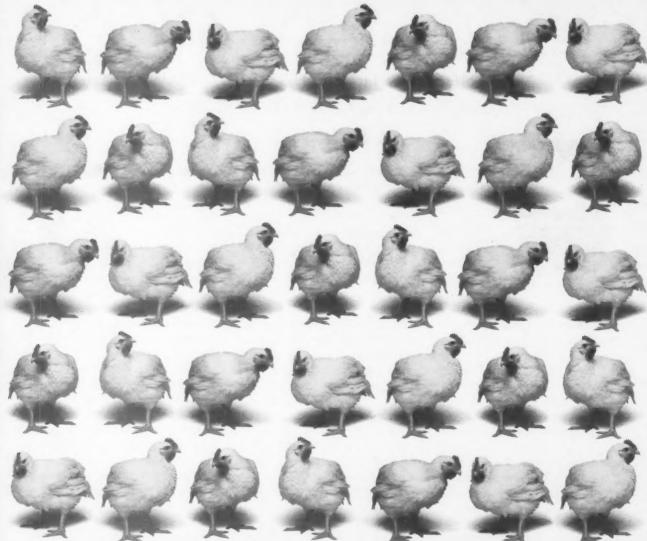
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Mr. Bill Clontz System Director of Computer Services Holly Farms Roods

"MANTIS was ideal for us because you don't need 2-3 years of experience to use it," explained Bill Clontz, Director of Computer Services at Holly Farms. "It lets us take new graduates, quickly train them and, in a matter of weeks, turn them into valuable programmers."

As a result, programmer productivity at Holly Farms has reached an all-time high. "We've seen substantial improvement ratios," Clontz said. "In the time a programmer might turn out one CICS command-level program, he can turn out from six to eight programs on MANTIS."

Most of the 500-plus MANTIS applications now in production at Holly Farms are aimed at streamlining costs. For example, Data Processing used MANTIS to develop a model of how chickens consume feed over the course of their lives, allowing Holly Farms to cut production at one of its feed mills by 1½ days a week.

"We've got key users who are picking up on the term 'MANTIS,''' Clontz noted. "Around here, MANTIS has become a synonym for 'get it done quickly.""

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IBM, ISO standards garner support

Advanced Computer Communications (ACC) has unveiled its initial implementation of the International Standards Organization (ISO) protocols. ACC's pilot project implements ISO Transport Protocol Class 4 and the Internet Protocol while providing CCITT X.25 services. ACC is targeting Transmission Control Protocol/Internet Protocol to Open Systems Interconnect (OSI) migration. The company said it is developing a package of higher level OSI protocols, including FTAM, to run on Unix hosts.

Newbridge Networks, Inc. has announced IBM Netview support for its 4600 Mainstreet Network Management Systems. The 4600 Mainstreet products, which manage networks using Newbridge's T1 multiplexers, reportedly can send network alarms and alerts either to Netview on the host or to the Netview/PC interface.

Tracs, Sterling Software, Inc.'s mainframe-based batch data communications product, will now support dial-up Systems Network Architecture (SNA) Synchronous Data Link Control sessions. The SNA version of Tracs provides high-speed batch file transfer between IBM and compatible mainframes and many remote computers, including non-IBM equipment.

An underseas telecommunications cable system in Taiwan reportedly set a record for sending fiber-optic signals when it went into service Aug. 15. AT&T, which designed the repeaterless cable system for the Directorate General of Telecommunications in Taiwan, said the system will send voice, data and/or graphic information at 417M bit/sec. over 104 km of cable.

The U.S. Telecommunications Suppliers Association and the Information and Telecommunications Technologies Group of the Electronic Industries Association have merged to form the Telecommunications Industry Association, with offices in Washington, D.C., and Chicago.

Kinetics Corp. has cut the price of its Etherport series of controller cards for Apple Computer, Inc.'s Macintosh II and Mac SE from \$795 to \$695. The products link Macintoshes over an Ethernet network.

Also rolling back prices is Novell, Inc., which has cut prices on both Netware Care, a localarea network management and diagnostics package, and Service Response System (SRS), a LAN database and call-management

package. Netware Care Level I will now be priced at \$195, while Netware Care Level II will sell for \$495. SRS Module I will be priced at \$995, while the SRS Module will sell for \$995.

In addition, Provo, Utah-based

Novell has detailed support for IBM's DOS 4.0. The Netware Workstation Shell Kit for DOS 4.0 costs \$50 and includes an unlimited users license. Subscribers to Novell's Netwire may download the new shell free of charge in slie called Net4-ARC.

Alloy Computer Products, Inc. has extended the warranty on all hardware in both its storage and connectivity product lines from six to 12 months on all products purchased after July 1. Alloy will extend the warranty another two years if the customer pays an additional amount equivalent to about 10% of the purchase price.

Codex Corp. has pumped up its network integration offerings with the release of Netvalue Software Services, a support program designed to ensure peak network performance through continual software upgrades. Initial services will support the Codex 9300 and 9800 Series Integrated Network Management Systems.

XEROX

Is your printer tying up your computer?

Because an extraordinary number of data centers still output to impact printers, the latest data processing technologies are often lashed to 25-year-old printer technologies. As a result, your data center may be suffering from a lack of productivity, low print quality and other production inefficiencies.

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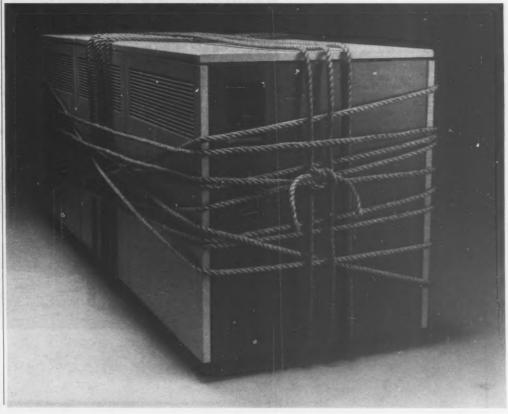
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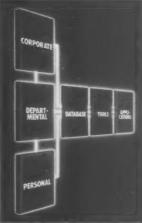
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ANSI says channel to exceed FDDI, Ethernet top speeds

A high-speed point-to-point channel standard that its authors claim can hit peak data rates of 1,600M bit/sec. is expected to be put up for public review as early as the end of the year by the American National Standards Institute (ANSI).

Although the cheetah-like bursts of the High-Speed Channel (HSC) would overshadow emerging high-speed standards such as the 100M bit/sec. Fiber Distributed Data Interface (FDDI) and the 10M bit/sec. Ethernet, it would not provide as comprehensive a communications solution, HSC authors said.

Still in its embryonic stage, the HSC has already drawn support from several industry heavyweights, including IBM, Digital Equipment Corp., AT&T, Data General Corp., Cray Research, Inc., Fujitsu Ltd. and Amdahl Corp.

The HSC is expected to be fine-tuned

by the parent ANSI committee when it meets in Boston next month, said Ed Balogh, a senior section manager at Gould, Inc. who attends meetings of the ANSI X3T9.3 subcommittee working on perfecting the HSC.

The standard's purpose is to facilitate development and use of computer systems by providing a common interface at the physical and data link layers.

Optimized for large data block transfers, it is expected to be used in conjunction with high-resolution graphic displays, data acquisition from satellite feeds, highperformance block transfer peripherals and front-end servers handling several powerful units. "Think of it as a giant fire hose working between high-speed machines," Balogh said.

The HSC will be able to transmit digital data at peak rates of 800M or 1,600M bit/sec. between data processing equipment using copper cabling at distances up to 25 meters, Balogh said. Equipment using fiber cable may be serviced up to two kilometers.

ANSI's current IPI standard, on the other hand, allows users to transfer data up to 50 meters but does not have the facility to work on fiber.

Fills speed need

Don Tolmie, chairman of the HSC committee and technical coordinator at the Los Alamos National Laboratory, said work began on the standard about 11/2 years ago when "there was nothing com-ing out at the speeds we were asking for."

Tolmie's office plans to use the HSC for high-resolution graphic displays. 'Using what's available today, we can get a TV-quality picture on our screen, but our researchers say they'll need a much higher quality picture to see the detail in what they're working on," he said.

Tolmie is unsure whether available software will be able to handle the excessoftware will be able to linearly still up in the sive transfer rate. "That's still up in the air," he said. "I suppose we'll have people air," he said. "I suppose we'll have people

Balogh added that the HSC will not challenge other emerging high-speed standards like FDDI or 10M bit/sec. Ethernet because HSC's use is very limited. "HSC is not the total solution that FDDI is," Balogh said. "FDDI allows you to communicate between multiple users at many locations. HSC simply works from one point to another.'

The HSC is also expected to fit neatly into the Open Systems Interconnect Ba-

sic Reference Model.



FROM PAGE 51

Defense Logistics Agency. The system transmits bill-of-lading data to private freight carriers, the freight receiver and the shipper's finance center, allowing carriers to submit EDI invoices

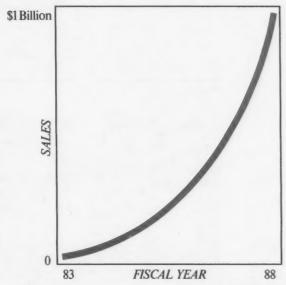
Many government EDI applications fall into purchasing or billing, experts said, citing these examples:

- The Pentagon's Computer-Aided Acquisition and Logistics Support (CALS), a \$190 million program that transmits weapons data from contractors' computer-aided design systems directly to a government database. Robert B. Costello, the Pentagon's undersecretary of defense for acquisition, recently noted that the CALS program will be accelerated by budget cuts.
- The General Services Administration is using X12 to transmit purchase orders for furniture and plans to test X12 invoicing
- · Some military commissaries and exchanges are using EDI to send purchase orders to warehouses and suppliers.
- The Veterans Administration is using X12 to receive invoices from hospital suppliers Du Pont Co. and Baxter Health Care Corp., said Ray Hipsher, EDI coordinator at the agency's finance center in Austin, Texas.

Hipsher is chairman of the ANSI X12 Government Project Team, chartered last year both to develop new X12 formats for government-specific EDI applications and to ensure that existing formats meet agency needs.



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work problems would develop, and "we couldn't figure out if the problem was on the DG [Eclipse] end or on a specific PC," he said.

For example, Sniffer can ferret out a bad PC board across the firm's five-story skyscraper complex in seconds, Cartier said. Recently, the product caught a third-party software package doing exclusive opens on files, so that only one user at a time could read or write to a file.

The product can also figure out approximately how far from a DG MV host a cable break is located, Cartier said.

The DG/Sniffer is a modified version of Network General Corp.'s Sniffer Protocol Analyzer, which runs on IBM Personal Computer compatibles. It supports DG's Starlan and Ethernet networks. Optional support is provided for other protocols, including DG/X.25, Transmission Control Protocol/Internet Protocol (TCP/IP) and DEC's Decnet. Available now, it ranges in price from \$16,000 to \$22,800.

Fremont, Calif.-based Alantec introduced the Smartlan Manager, a turnkey package said to collect and analyze performance statistics for its new line of LAN bridges. Smartbridge reportedly connects Ethernet LANs across wide-area links. transparently handling upper level protocols such as Decnet or

Troubled waters

Alantec's Multiple Network Statistics and Analysis product monitors the number of packets transmitted from individual LANs across Smartbridges. The system can be programmed to initiate operations on a "hot backup" bridge when the primary bridge fails or when traffic reaches a certain level, the vendor said.

Based on a 16-bit, IBM PC-DOS platform, the system can monitor and configure as many as 128 Smartbridges. Smartlan Manager Model 1000, with PC add-on board and software, costs \$3.580, Model 2000, a bundled workstation version with an IBM PC AT, costs \$7,180.

Smartbridge is said to process 13K and forward 6K packets/ The basic Smartbridge Model 1000 costs \$1,580; the Smartbridge Model 1010, with network management, costs \$1,980; and the Model 1050, also with a PC AT, costs \$2,980.

Cabletron Systems, Inc. in Rochester, N.Y., has unveiled Lanview, a network management component for its Multimedia Access Center. The Center, which has been shipping for six months, provides IEEE 802.3 Ethernet transmission over a variety of cabling media.

The product also can be programmed to respond when traffic or error levels exceed a userdefined limit by setting off an alarm, causing a port or board to shut down or switching operations over to a backup unit, said Robert Monaco, Cabletron di-

rector of marketing.
Available now, Lanview is an optional Multimedia Access Center feature, priced at \$650.

Study: Medics prefer Novell

TEMPE, Ariz. — Novell, Inc. in Provo, Utah, led IBM, 3Com Corp. and Digital Equipment Corp. as the preferred supplier of networking systems in the medical market currently dominated by IBM and DEC equipment, according to a recent study from The Sierra Group, Inc., a market research firm based here.

The report, "Demand for Information Systems and Software in Medical Markets," details the spending trends of 240 users during 1988, which show a strong demand for Novell's Netware. The survey results led Sierra to conclude that Novell will maintain its current position of leadership.

Novell's emergence as the market leader, outselling its nearest competitor, IBM, by a 3to-1 margin, should "send shock waves to the nerve endings of IBM and DEC," the study suggested.

Sierra maintains that the inroads made today in networking in the medical markets will provide the key to account control of that market in the 1990s. "Novell has strategically positioned itself perfectly for the longer term payoff," the study said.

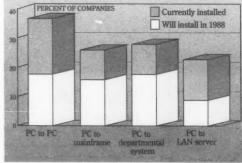
The majority of users sureyed said they will be acquiring LANs to provide personal computer-to-PC or PC-to-departmental system connectivity.

Of the respondents, 19.2% were using LANs for PC-to-PC links, a number that will grow to 36.7% this year, and 10.4% were tying PCs to departmental systems, a figure expected to grow to 27.9% by year's end.

Sierra interprets that data to mean that many departmental systems will provide network file-server functions.

Medical links

A survey of 240 medical organizations shows largest appeal for connectivity linking PCs together and to departmental systems



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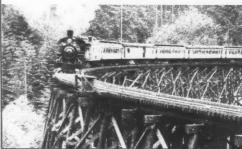
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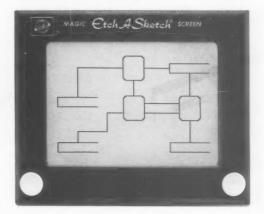
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Most CASE tools are dictionary-based. They store graphic components of diagrams (boxes, lines, arrows, etc.) in one file....and store descriptions separately in a dictionary. You have to create diagrams, *manually* describe what they mean, then *manually* link the descriptions to the diagram components. If you forget anything, the diagrams get out of sync with the dictionary. And this leads to inconsistent systems specifications and designs.

KnowledgeWare's Encyclopedia guarantees consistency

KnowledgeWare tools *interpret* the actual meaning behind diagrams (object types, relationships, associations, etc.) and store that information in a single knowledge-based "Encyclopedia." Request a diagram and our expert system *draws* it from stored knowledge. So it's *impossible* for diagrams to be inconsistent with the Encyclopedia.

KnowledgeWare software products are available from KnowledgeWare sales offices in the U.S. and from Arthur Young International member firms outside the U.S. Ohio Art's Bich-A-Sketch® Magic Screen is available at toy stores exercised.

Keeps all diagrams up to date all the time

The specification and design of computer systems requires iterative changes. And each change can impact many diagrams. With most dictionary-based CASE tools you must repeatedly update every affected diagram, because each is an independent picture.

It's much easier with KnowledgeWare CASE tools. Each time you enter or modify information through a diagram, the expert system updates the Encyclopedia. And all diagrams automatically reflect current knowledge.

Enforces the rules of computing

Most CASE tools allow software engineers to specify and design systems that can't be constructed. Their diagrams may have missing inputs, circular relationships, or outputs that go nowhere.

KnowledgeWare's realtime expert system automatically checks and enforces hundreds of logic rules. It calls attention to errors and inconsistencies. And it checks for completeness. All without limiting you to any particular methodology. This automatically assures that specifications and designs can be translated into real systems.

Automatically redraws information in other formats

A dictionary-based tool that stores diagrams as boxes, text, and arrows can reassemble those parts on the screen. But you only get back the same diagram that you put in. Since KnowledgeWare CASE tools store objects and relationships, you can display that information in various ways. For example, use our Analysis Workstation to draw a Data Flow Diagram. The Analysis Workstation can then automatically construct the corresponding Process Decomposition Diagram.

Provides a state-of-the-art user interface

Most CASE tools have not kept pace with advances in user interface technology. Some may even require you to learn different interfaces in different parts of their product.

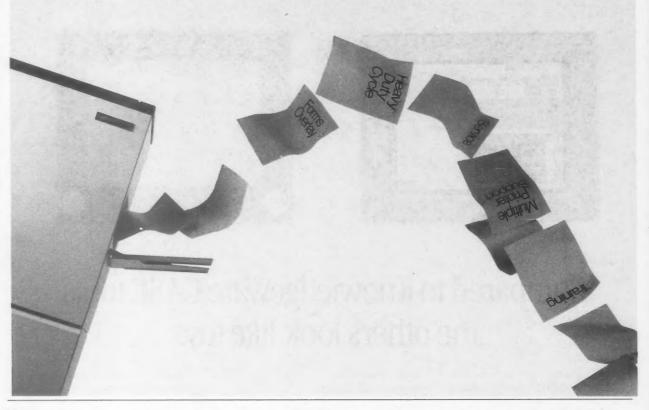
KnowledgeWare workstation tools are mouse-driven with pull-down menus. You can view many diagrams and definitions at the same time in multiple windows – and in different colors. You can zoom in and out, nest diagrams, mask out distracting elements, and highlight the path of information through a number of diagrams.

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Passmore

FROM PAGE 51

network using IBM's X.25 Interconnection (XI) product.

There are, of course, tradeoffs to be considered. For example, SNA session performance is generally not as good on an X.25 network as in a pure SNA environment.

One reason for this is that sending the SNA traffic over an X.25 network involves double-packetizing with both SNA and X.25 Level 3 headers, which adds transmission overhead.

Running SNA session traffic over an X.25 network also requires more "hops" in the communications path, introducing additional message-queueing and serialization delays and reducing overall network availability with more components to fail along the communications path. Another drawback is that two separate network management systems are required to manage both environments.

There are still several good reasons to integrate X.25 and SNA: to link IBM to non-IBM systems, many of which support X.25 protocols; to communicate with overseas companies or sites, many of which support the CCITT X.25 standard; and to take advantage of the cost/performance benefits that packet-switching offers over dedicated circuit-switched networker.

Even when most network traffic is SNA, a telecommunications department may choose an X.25 network in order to remain somewhat independent from an SNA-oriented MIS department.

The opposite approach to running SNA over X.25 involves using an SNA transport network to support X.25 virtual circuit service. IBM's XI software supports this capability running in a 3705 series Network Control Program communications processor.

XI for big users
IBM is pitching XI to larger
customers who already have a
substantial investment in implementing an enterprisewide

SNA network and who wish to use existing SNA equipment for X.25 traffic.

XI converts host X.25 packets to and from SNA packets for transmission across an SNA backbone. X.25 virtual circuits are multiplexed across SNA sessions in the backbone. One nice feature of XI is that it the software permits X.25 networks to be managed by an IBM Netview host running IBM's Network Supervisory Facility soft-

Disadvantages of XI include its cost, not just for software but also for 3705 series processing cycles and memory as well as the additional configuration effort required.

In the future, the separate

product categories for X.25 packet switches vs. SNA communications processors will break down. The widespread implementation of corporate utility networks will require that communications processors provide external network interfaces to efficiently support both types of protocols.

For example, a number of traditional X.25 packet switching vendors are developing products that use integral SNA support. This will further reduce the number of nodes and network hops required for each SNA session and eliminate frontend processor requirements.

Passmore is a principal with Network Strategies, Inc. in Fairfax, Va.

High-speed FROM PAGE 51

during the last 13 months, constitutes the first commercial implementation of the 10M bit/sec. version of Starlan, the vendor early

Sidley & Austin had installed a 1M bit/sec. version of Starlan for evaluation last year but opted for the faster version because of the need for better response time during peak traffic periods, when many PC users are contending for shared resources, the company said.

The final phase of automation, slated for this summer, is to link the firm's primary offices here with three others in New York, Los Angeles and Washington, D.C. Once complete, Sidley & Austin's network will allow lawyers to forward electronic voice messages from one office to another by dialing the phone extension of the lawyer receiving the message.

Attorneys and secretaries within a given work area will be able to exchange documents and share an AT&T laser printer over Starlan-10. Different work areas will exchange data messages via a connection to the AT&T Information Systems Network (ISN) switch, which sends the data out over a 56K bit/sec. line to another ISN in another city.

The ISN switches also interface with System 85 private branch exchanges (PBX) to direct digitized voice transmissions among users in various corporate sites around the world.

Networking the AT&T 6300
Plus and 6312 PCs was an essential objective of the firm's automation strategy, said Edward J. Kernan, Sidley & Austin's administrative director. "We needed to come up with a solution that allowed for expansion and growth," Kernan said.

Most of the corporate law practice's offices are located on 11 floors of the First National Bank of Chicago's building here. Ongoing remodeling of those floors allowed the firm to do a

thorough rewiring job, Kernan

Each work area was equipped with four twisted-pair wiring connections: one for the 6300 PC to plug into Starlan; a second supporting voice connection to the System 85 PBX; the third hooking up either to a shared laser printer or typewriter via Starlan; and a fourth that has yet to be assigned.

PCs and a mid-range

Sidley & Austin ordered massive numbers of AT&T devices. But it also opted to install a new IBM System/38 in a fully-conditioned computer room fashioned from excess office space.

After a few months of testing.

the System/38 will run payroll and financial applications that had been done on a Michigan service bureau's IBM mainframe for the last 17 years.

Users can send files to the System/38 via an ISN switch in Chicago. The ISN collects Starlan packets and translates non-IBM protocol messages to the IBM host computer.

"We found a System/38 package written by a Houston law firm that drove our hardware decision," explained Kenneth R. Mineau, the firm's manager of information services.

Personal productivity has doubled or tripled since the installation of the networked PCs, Kernan claimed.

NEW PRODUCTS

Local-area networking software

Excelan, Inc. has introduced several new features to its LAN Workplace product.

These enhancements include user communications capabilities directly with IBM mainframe systems on Ethernet; connection to Novell, Inc.'s Advanced Netware 2.11 and 2.15 servers; and support for numerous terminal emulation programs offered by third-party vendors.

For direct IBM mainframe connectivity,
3270 is said to provide LAN Workplace Hostaccess users with direct TN3270 Telnet terminal service to IBM 3080, 3090, 4300 and 9370 systems running Transmission Control Protocol/Internet Protocol for IBM's VM on Ethernet.
Hostaccess/3270 will also

Hostaccess/3270 will also provide IBM 3278 Model 2 terminal emulation.

Hostaccess/3270 V3.5 will be available this September and will cost \$100, according to the vendor.

Excelan's support of the No-

vell Advanced Netware 2.15 Server will reportedly provide LAN Workplace users with transparent resource integration for Kinetics Corp.-connected Apple Computer, Inc. Macintosh systems on Novell Netware for Macintosh.

The LAN Workplace Driver for Netware V3.4 is currently available for a price of \$25.

Excelan, 2180 Fortune Drive, San Jose, Calif. 95131. 408-434-2226.

Links

Ideassociates, Inc. has introduced a product that allows IBM Personal Computers to communicate with IBM System/34, 36 and 38 minicomputers. Called Ideacomm 5251/Plus, the emulation facility is said to offer seven concurrent host sessions and windowing capability and is compatible with the IBM Personal System/2 Models 30, 50, 60 and 80.

The company also announced several software enhancements for its IBM 5251 product line, including IBM 3196 terminal emulation, IBM 4214 system printer emulation and multiple system

printer emulation. The software is available in Version 5.0 for both Ideacomm 5251 and Ideacomm 5251/Plus products and may be obtained through dealer, value-added reseller and OEM channels.

Ideacomm 5251/Plus costs \$1,095; Ideacomm 5251 costs \$895. Software upgrades cost \$200 and \$80, respectively.

Ideassociates, 29 Dunham Road, Billerica, Mass. 01821. 617-663-6878.

A micro-to-mainframe software package from Control Data Corp., called the Vista Application Link, reportedly gives Lotus Development Corp. 1-2-3 and Symphony users, as well as Ashton-Tate Corp. Dhase users, direct access to the CDC Cyber series, the Digital Equipment Corp. VAX series or any Unixbased system.

The program allows end users to access mainframe data from within the personal computer application. Ten mainframe data interfaces are available, including a connection for Oracle Corp.'s Oracle, Relational Technology, Inc.'s Ingres, CDC's IM/DM, DEC's RDB and DBMS and Informix Software's Informix databases.

The software operates with

the IBM Personal Computer, PC XT, AT and Personal System/2 microcomputers and compatibles running 1-2-3, Symphony or Dbase.

Cyber systems running CDC NOS and NOS/VSE, VAX systems under VMS or Unix and all other Unix systems are reportedly accessible.

Vista Application Link costs from \$2,000 to \$40,000, depending on computer system configuration.

CDC, Suite 200, 9111 Edmonston Road, Greenbelt, Md. 20770. 301-982-9550.

Electronic mail

Cappcomm Software, Inc. has announced an electronic mail system designed to enhance and extend the E-mail capabilities of Digital Equipment Corp.'s All-In-1 within a personal computer environment.

The product, designated Mail Call-EM, can be tailored to the customer's specific communication requirements. Features reportedly include flexible control scripts, custom forms, screens, message processing and corporate or department logos. The product will include an administrator and user hot line, on-site training, installation assistance and an ongoing mainte-

nance program.

Mail Call-EM will be sold by site distribution license. Prices range from \$900 for a DEC VAX-11/730 to \$16,400 for a VAX 8800.

Cappcomm Software, Suite 1003, 26 Journal Sq., Jersey City, N.J. 07306. 201-795-1500.

Modems/ Multiplexers

Corollary, Inc. is now shipping an updated version of its multiplexer device driver. The product is a 32-port I/O subsystem that supports VP/IX, which allows DOS to run under Xenix, the firm said

The 8x4 Multiplexer device driver is configured in half-card format and uses a multiple-processor distributed architecture that places intelligence on both the 8 by 4 processor board and in the remote 8-channel terminal concentrator unit. The product connects as many as 32 terminals to an Intel Corp. 80386 system running under Xenix/DOS, according to the company.

The Corollary 8x4 Multiplexer is priced from \$1,395.

Corollary, P.O. Box 18977, Irvine, Calif. 92713. 714-250-







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Video Seven Inc., 46335 Landing Parkway, Fremont, CA 94538, (415) 656-7800

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IN DEPTH

Form precedes function

Try a design-first approach for strategic systems development

BY FRED L. FORMAN and MILTON S. HESS

ankamerica scraps its much-touted Master-net project, Allied Stores cancels a \$30 million information systems program, the U.S. Patent Office experiences nightmarish problems in automating its operations — all recent examples of failures in strategic systems development. And these are just the blatant disasters.

As many as 75% of all large systems could well be categorized as "operating failures." Although in production, these systems either took so long to implement, cost so much more than originally planned or are so functionally deficient that users are not reaping the expected benefits.

But a successful systems development experience can be achieved. How? The syst. 's development plan should consider both management and technical

From the management strategy perspective, include effective involvement of users and managers, incremental definition of key deliverables, a chief architect with management responsibility and a phasing strategy with a relatively short-term results orientation.

On the technical strategy side of the equation, implementing a modified life-cycle methodology that incorporates a "designfirst" approach can also contrib-

Forman is an executive vice-president and manager of the Corporate Technology Group at American Management Systems, Inc. (AMS). Hess is a vice-president in the Federal Consulting and Systems Group at AMS. AMS is a computer services and products company based in Arlington, Va.

ute to successful systems development. In other words, design the system before defining the functional requirements in detail.

Although this part of the strategy differs significantly from traditional software life-cycle methodologies, it parallels the way many large engineering projects are designed and built today.

Putting form before function allows MIS developers to build a complex information system that meets user requirements, is developed in a reasonable time at

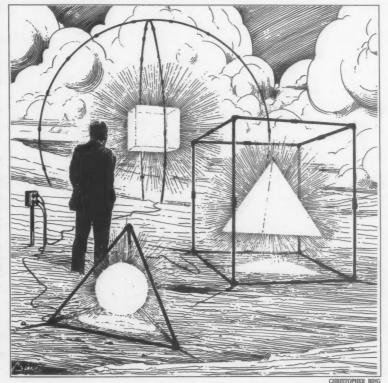
an efficient cost, performs well and can be inexpensively maintained.

The old ways

Traditional methods of developing business systems involve a relatively common phasing approach. In the analysis phase, the design team would prepare a detailed functional description of the new system, typically using techniques such as data flow diagrams or functional decomposition charts.

This process defines the system to a fine level of detail, usually including I/O formats, database specifications and detailed process specifications, or minispecs. Then the design phase would be implemented, in which the software and database components are designed from a physical perspective.

But at this point, the damage has already been done. By developing the specifications from a purely functional perspective, the design team, regardless of its competence, has exposed the project to three problems that make large systems difficult to develop successfully. These



- Finding the pattern in the problem
- · Recyclable, foundation software
- Plug components into "standard sockets"

three problems are as follows:

• Intellectual complexity. A large system is composed of a lot of functionality. If the specifications are too complex for the chief architect to maintain in his head, total understanding of the project is dispersed among all the members of the project

This situation requires a tremendous amount of coordination, and it virtually ensures that some requirements will be misstated, misunderstood or omitted entirely.

• Technical risk. Specifying the functional requirements in detail first, then doing the design later, increases the risk that the technical approach will have undesirable side effects.

These effects frequently do not appear until the integration testing or production operation phase of development. Functional decomposition limits the opportunity for the project team to consider alternative designs early in the project.

• Standards enforcement. It

ture. An architect designs an office building around a generic set of requirements tied to the site's characteristics and to the type of tenant to be served. When a tenant decides to lease space in the structure, the architect addresses his unique requirements within the context of the overall de-

Other examples of the designfirst approach include the construction of commercial aircraft, highways and computers. In each case, the system is designed initially around generic requirements and design principles that the engineers have identified from preliminary studies and prior experience. Why not develop large software systems the same way?

Keep it simple

The objective of the design-first strategy is to replace the complex structure of interacting subsystems with linear arrays of standard types of components embedded in a foundation software framework.

S MANY as 75% of all large systems could be categorized as operating failures. They either took so long to implement. cost so much more than planned or are so functionally deficient that users are not reaping the benefits expected.

is difficult to achieve uniform specification, design and development practice on a large proj-

If such uniformity is to be achieved, it requires a great deal of coordination among the project team members and enforcement of control procedures such as standards audits. The cumulative effect of this effort grows more than linearly with the size of the project.

Contrary to conventional wisdom, large systems need not be disproportionately more difficult to develop than small systems. It is possible to achieve a linear effort/size curve, using the designfirst strategy.

The "System Concept"

The key difference between this approach and that of the traditional life cycle is designing the system before developing detailed functional specifications.

The first major phase in this life cycle, the "System Con-" is used to develop a complete understanding of the objectives and constraints of the system and to define an overall design strategy.

Next, the top-level software design is developed. Then, within the context of this design, the detailed functional specifications are prepared.

Many other engineering disciplines provide rich examples of the design-first approach. The most familiar of these is architec-

In other words, build the standards into the software design. In this approach, reusable founsoftware implements those standards that the project management team wants to en-

The foundation software performs common functions in a standard way, eliminating a great deal of redundant effort, cost and risk while improving the resulting system.

Examples of the functions performed by the foundation software framework include dialogue management, reference data management, transaction suspense and error correction, personal computer interface and many others

In addition to performing common functions in a standard way, the foundation software also provides "standard sockets" for application components: report programs, screens, edit/update programs, extract programs, reference tables and so

The foundation software provides a standard protocol for invoking each type of component. The standard framework implements the standards that the quality assurance function would otherwise have to review. An information system consists of a relatively small set of application component types.

If the system is designed so that instances of these component types can be plugged into standard sockets in the framework, the nonlinear problem can be transformed into a linear one.

The pattern in the problem

The key to eliminating the non-linear effect of size is to reduce the intellectual complexity of the problem. Since a large system will always be composed of a massive amount of functional detail, however, this would appear to be wishful thinking. The most feasible alternative is to discern the pattern in the problem.

There are some excellent examples of software that exploit the patterns inherent in their problem domains. A well-known one is the spreadsheet, which allows users to solve any problem that can be represented as rows and columns of values, labels and formulas.

The pattern is identified by abstracting the functional details into higher order constructs. As the project team works on the functional model of the new sys tem, it has to actively formulate abstractions that will restate the details in a unified manner. Even more valuable, they will disclose previously unrecognized func-tions and features. This translates directly into reduced maintenance costs later in the life cycle, because these previously unrecognized capabilities will not have to be added as future enhancements.

Once identified, the pattern suggests a structure for the system. The system can be thought of as a mechanism for processing instances of the pattern. This leads naturally to a search for common functions that will be required to support the processing of these instances. Finding the pattern leads to an improved understanding of what the system will do and how it will do it.

The System Concept is the proper stage in the development cycle to identify the pattern in the problem and then formulate a design based on that pattern.

Technical risk

The traditional life cycle increases the technical risk that the system as built will not meet its original objectives. By developing requirements first, the design is postponed until the subsystems have been specified in detail. This is much too late in the system development cycle, because the functional specifications will generally establish a design approach to the exclusion of other, perhaps better, design alternatives

Although requirements definition is not supposed to dictate a design approach, it invariably does. The project team is composed of people who have their own ideas of how the system should work.

The project team can unwittingly embed these ideas in the specifications, particularly as the team proceeds to finer levels of

Continued on page 70

Hey, can't you read design?

BY MICHAEL B. COHN

Design it first? How much more can a software programmer take? Structured coding was one thing. Documentation started to push it. But now, management seems to have this obsession that we have to actually design our systems before we start to code them.

Believe me, if you haven't tried this, it can really be a pain. The object of this strange exercise is to fill your white board with all sorts of boxes and arrows so you can produce a simple, three-color model of how your system will

Cohn is a quality assurance repre sentative and user based in Atlanta. work for at least the first 20 or 30 minutes of a project.

Fortunately, you only have to do this once; you can leave the same flowcharts on your walls for three or four consecutive projects. But be sure to rearrange them every quarter, just to avoid any suspi-

And rather than force you to endure the embarrass ment, time and frustration of trying to interpret what these cryptic shapes and scribblings really mean, assembled below are about a dozen of the most commonly used symbols and conventions. With the help of virtual storage, and a little creativity, it now takes a lot less than 1.000 full words to make a picture.



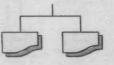
One to many

Procrastination box

Many to too many

Many to many

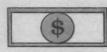
Assign it to them Assign it to me, I'll assign it to them





Intended report distribution

Actual report distribution





Projected revenue

Actual revenue





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Scratch tape

We design software to interface with the most important part of your business. truly integrated processing environment. And it remains so today as we shape that



Without taking anything away from R&rD, strategic planning or corporate communications, people are still the heart of every successful business.

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companies requiring up to five hundred telephones.

A pioneer company in the development of fiber optics, Alcatel Cable Systems offers one of the industry's most extensive product lines. Including optical fiber; copper, fiber, submarine and tactical cable; and "fiber-to-the-home" systems.

Alcatel Network Systems/Transcom brings over 65 years of experience to the development and manufacturing of highquality telecommunications, transmission and switching products.

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Form

FROM PAGE 66

detail in system development.

When the project finally enters the design phase, many design decisions have implicitly or explicitly been made. In order to avoid this phenomenon, try developing an overall functional

and technical design approach

during the System Concept phase.

In preparing the System Concept, explore a variety of design approaches, evaluating them for feasibility, risks, schedule impacts, benefits and costs.

Collaboration

Thus, in consultation with the user or client, the system design that offers the best overall chance of success can then be selected.

The System Concept has to be prepared by a small team of senior people who possess both functional and technical skills and experience.

The project team has to include functional specialists, because defining high-level functional requirements is an integral part of a System Con-

cept study. The project team must also include technical people to formulate and evaluate design approaches.

Most important, though, the participants have to work as a single team. A System Concept cannot be developed by the loosely coordinated efforts of separate project groups.

After the design-first strategy has been adopted and the project team has recognized a pattern in the problem and has prepared a System Concept that embodies the pattern in a technical architecture, development can go from there.

Mutual consent

But both the user and developer must agree that the System Concept is a sound basis for proceeding with the project. Qnly then can the project team add staff and organize into subsystem teams to prepare the detailed

HE participants have to work as a team. A System Concept cannot be developed by the loosely coordinated effort of separate groups.

specifications and design and develop the software.

Key to the design-first technical strategy is reducing intellectual complexity and technical risk. This can be accomplished by first executing a System Concept phase in which key architectural design decisions are made prior to detailing the functional specifications. The development of foundation software to implement the common patterns in the problem both reduces overall effort and naturally enforces standards.

It is not inevitable that most strategic systems projects be failures. Quite the contrary. With an effective management and technical strategy, most strategic systems projects should be unqualified successes. •

SCIENCE/SCOPE®

A new, body-stabilized satellite will satisfy high-power communications needs into the 21st century. Designated the HS 601, the satellite's sun-tracking solar arrays are covered with large area solar cells capable of generating up to 6,000 watts of power. Today's medium-sized satellites generate about 1,000 watts. The increase in power will allow the satellite to adapt to a wide range of applications, including full-motion videoconferencing, multiple-channel direct broadcasting, and very small aperture terminal (VSAT) networks. The HS 601, under development at Hughes Aircraft Company, is expected to be ready for service in 1991

A new radar system is used to measure the radar reflectivity of an object. The radar cross section (RCS) measurement system can reproduce a two-dimensional image of a target, such as an aircraft, and the information can be used to help redesign the aircraft to reduce its visibility to enemy radar, resulting in "low observable," or stealth-type vehicles. The Hughes RCS system is universal and programmable, and is designed to take measurements over a broad band of microwave frequencies, from 0.1 to 100 gigahertz. The system can thus tell the user how visible a target would be to the "eyes" of any radar in the world.

A new Dome Display System will incorporate background and target projectors with twice the resolution and twice the targets of those previously simulated by other trainers. The system, provided by Hughes, will be used in Lockheed's YF-22A Advanced Tactical Fighter (ATF) prototype development program. The display will include a 28-foot dome and other associated visual system equipment. The Dome Display System is one of several ATF programs currently being developed by Hughes.

A new relay pod will enable real-time, two-way data transfer between ships and remotely piloted vehicles (RPVs) at altitudes as low as 500 feet, and ranges up to 350 nautical miles. Designed by Hughes, the relay pod could be carried by a Grumman A-6 aircraft for the U.S. Navy mid-range RPV program to transmit video and infrared reconnaissance data. Using the relay pod on such missions gives a commander access to data in near real-time. Principles and concept for the design were demonstrated in 1987 during the U.S. Army Intelligence-Early Warning RPV program at Ft. Huachucha, Arizona. Successful airborne and ground relays of tactical data were completed in conjunction with the Development Sciences Corporation Skyeye RPV.

Hughes is seeking experienced engineers and scientists to further develop advanced spacecraft systems and components for communications satellites. Openings are in the fields of: software, computers, and data processing systems; electrical components; microwave/RF communication systems development; on-board spacecraft electronics and control systems; satellite design, integration, propulsion, and electrical power system development; spacecraft manufacturing, systems test and evaluation; GaAs applications R&D. Send your resume to Michael Martinez, Hughes Space & Communications Group, Dept. S3, S4/A300, P.O. Box 92919, Los Angeles, CA 90009. Equal opportunity employer. U.S. citizenship required.

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#4	9/16	New York	#14	10/7	Philadelphia			CA	
#5	9/22	Boston	#15	10/18	Vancouver, B.C.	#24	11/4	San Jose	
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#7	9/23	Denver	#17	10/20	Nortolk, VA	#26	11/15	Houston	
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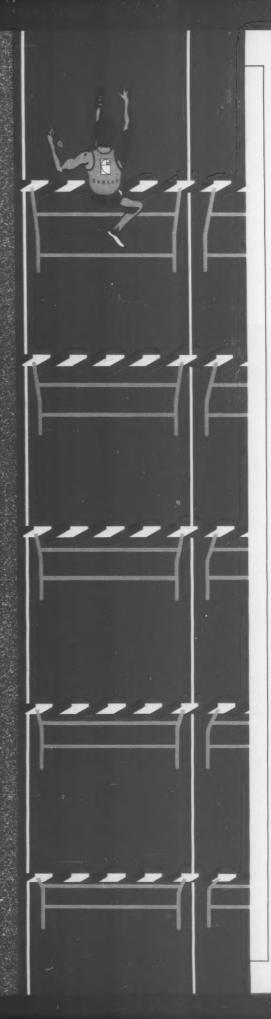
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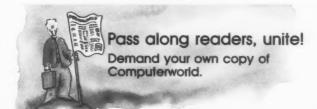
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Linking business and academia



Professor Donald Henderson of Mankato State University in Minnesota recently conducted a survey of

businesses and colleges to gauge how well computer science programs are meeting the needs of the business community.

His area of concentration is the rapidly growing and changing field of data communications

To quote from Henderson's report, "If we review the content of most computer science-oriented college or university programs, we find very little course activity in the data communications area of information technology. That is, or should be, a major concern to faculty in these programs, since the business world is rapidly moving their information gathering and distribution systems to on-line environments."

The recommendations from the business respondents for the colleges included the following:

 More emphasis on real-life solutions, modeling and case studies.

 Include course work on network management, evaluation and maintenance of existing systems.

 More physics and business courses and less mathematics.

 Have course work with stateof-the-art and futuristic topics.
 Continued on page 80

DP veteran votes for innovation

Hughes' Davis fosters entrepreneurial spirit in systems operations staff

BY PATRICIA KEEFE

If there's anyone who could qualify as a walking history of computing, it's Roy Davis, a 30-year veteran of data processing. But lest you conjure up a picture of a traditionalist pining for the days of iron-fisted MIS control — think again.

That is exactly what Davis, a manager of systems operations laboratories at Hughes Aircraft Co., keeps exhorting his staff to

The best solution to any problem is not necessarily the way it was done last month or last year, notes Davis, who is part of Hughes' Communications and Data Processing Group.

So rather than Davis functioning as an omnipotent answer man, his staff is likely to view him as someone who provides more alternatives than actual solutions.

A priority for this easygoing

manager is to promote an entrepreneurial mindset among his staff, which he pushes constantly to find ways to adapt new technology to old problems — without disrupting corporate methodology or business procedures. "If you sit still, you die," he says.

That philosophy mirrors the way Hughes works, providing individual freedom to encourage responsibility among people with the commitment to work, Davis says. "You have to realize that as manager, you do a very little bit of the work; your job is to work through people."

Consequently, Davis spends most of his time among his staff. "The first thing you notice about my office is that I'm never there," he jokes.

While he feels it is important to rely on the technical judgment of the staff, Davis says he believes a good technical background is essential. "You need to have the right intuition to not be

fooled by staff and vendors or by

specious ideas," he says.

While he considers himself part of the new school of MIS, his education has been long and varied, and it reads like a chro-

nology of computing.
During the course of three decades, Davis has moved from working behind locked doors in the computer room to handing out the keys. He has gone from working with one of the first Univacs, the Model 11-3A, the early IBM 704 and 709s and Digital Equipment Corp.'s PDP-1, to handling an IBM 3090 Model 180, two IBM 3084 QXs, an Amdahl Corp. 5860, several Hewlett-Packard Co. HP 3000s and a

Continued on page 81

PROFILE Roy Davis



Position: Manager of systems operations laboratories at Hughes Aircraft Co.

Mission: To promote an entrepreneurial mindset among his staff members and to find ways to adapt new technology to old problems.

A well-traveled resume

n terms of his career, Hughes Aircraft's Roy Davis has mapped a flight path that has taken him all over the U.S. and through all manner of computer-related employment.

"Everyone says to me, "Why didn't you just stick to one thing?" Well, that would have been boring," Davis chuckles. If the following chronology is any indication, he hasn't been bored:

• In 1958, Davis found himself in California at Ramo-Wooldrige, the predecessor to TRW, Inc., working on traditional aerospace computing projects such as missile simulation and technical calculation.

Coast-hopping, he landed two
years later at Charles Adams
Associates, a Massachusetts
consulting firm. He cut his
teeth on automated drafting

and databases.

Rejoining TRW in 1962, Davis went to work writing simulation programs related to missile control and tracking.

 Davis made tracks for Pittsburgh and Carnegie-Mellon University, where he studied computer science and worked as a teaching assistant. He earned a master's degree in computer science in 1965.

 Next, he spent 10 years with a computer consulting firm in White Plains, N.Y., climbing to executive vice-president.

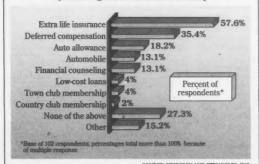
 In 1977, Davis joined a subsidiary of Citicorp that managed automation of branch operations and customer services. He was a project manager there for three years,

After a stint with an independent venture related to manufacturing industries, he joined Hughes Aircraft in 1983.

Data View

Future benefits

Life insurance and deferred pay are the leading perquisites for chief information officers in the health care industry



SOURCE: HEIDRICK AND STRUGGLES, INC. CW CHART

MANAGERS ON THE MOVE

Honeywell Bull users to confer

The first joint effort of two key Honeywell Bull, Inc. user associations is expected to draw about 2,000 attendees to the Honeywell Bull Users Meeting in Phoenix Oct. 2-5.

HLSUA, Inc. and North American Honeywell Users (NAHU) have been planning their joint meeting for about a year with the goal of providing a stronger voice for Honeywell Bull users.

The associations said that

while HLSUA traditionally has attracted users of large systems and NAHU originally drew small- and medium-scale systems users, the joint venture is justified by the increasing power of microcomputers and minicomputers as well as the growing use of operating systems that are common to multiple platforms.

Newly appointed Honeywell Bull Chief Executive Officer and President Roland Pampel is scheduled to deliver the keynote address

Information is available from HLSUA, P.O. Box 3279, Southfield, Mich. 48037, or NAHU, P.O. Box 2037, Willingboro, N.J. 08046.

The National Automated Clearing House Association (NACHA) is looking for nominations for its Payment Systems Award, which recognizes excellence in endeavors that speed development and advancement of automated payment systems. Nominations must be received by Dec. 1.

Information is available from Christine Pennella, marketing manager, NACHA, Suite 640, 1901 L St., Washington, D.C. 20036.

Ted O'Neill of Voorhees, NJ., was honored by the MUMPS Users' Group (MUG) recently for his achievements with the MUMPS language and his project management at the National Bureau of Standards (NBS) and the Veterans Administration (VA).

O'Neill, who worked on MUMPS standardization with the NBS before he joined the VA in 1977, was presented with an outstanding service award at the 17th annual MUG meeting in New Orleans.

He received the award on the 10th anniversary of the start of the VA's Decentralized Hospital Computer Program, an effort on which he helped to install MUMPS-based applications software at 172 VA hospitals nationwide.

The MUG meeting attracted 1,200 MUMPS professionals from 21 countries.

THE 1988 SALARY SURVEY

Continued from page 1

er senior managers who responded to the survey, the ones from Denver — relatively low on the pay scale — ranked first in satisfaction with their compensation and benefits. The relatively well-paid managers from Los Angeles and San Diego, on the other hand, said they are less satisfied (see chart page 76).

Overall, the 1,200 respondents to the survey expressed satisfaction with their compensation and benefits, with 14% calling them "excellent," 55% grading them "good," 27% finding them "fair" and 5% pronouncing them "poror" (see chart page 76). The portion that called compensation "excellent" is down from 18% in last year's survey as the "good" camp has grown from 52% and the "poor" contingent has risen from 4%.

dustries may be shielding MIS from cost cutting because of its importance. "My sense is it's not being as heavily pressured yet. I expect it will be eventually," he says.

Industries

Among seven vertical industries examined, utilities — including both power companies and communications services — pays the most in 20 of 25 job categories.

Salaries in education ranked last for all 25 positions, often by large gaps, reflecting the generally low pay in that field.

ing the generally low pay in that field.
Salaries in wholesale and retail trade tended to be second lowest, ranking sixth among the seven industries for 13 of the 25 positions. That performance gives the trade sector the dubious distinction of be-

Are you compensated fairly?

Of 1,252 Computerworld salary survey respondents, 68.7% rate their compensation and benefits packages as good to excellent



CW CHAR

Among the other findings were these:

• Compared with last year's survey, this year's found salaries in end-user support lower across the board; the averages drop 2.2% for information center managers, 8.5% for information center specialists and 6.6% for personal computer managers.

Budget constraints are prompting MIS directors to downgrade end-user support, in part because its value is difficult to measure, says John Connell, executive director of the Office Technology Research Center in Pasadena, Calif. "I don't think people have had their pay cut. The guy in charge moved into another assignment and his successor is paid less," he says.

Despite difficult years for these industries, respondents in insurance and banking/financial reported the largest average annual raises for their MIS departments, 14% and 11.1%, respectively.

Jim Champy, vice-chairman of the consulting firm Index Group, Inc. in Cambridge, Mass., says companies in these ining the lowest paying industry within the commercial sphere. It tended to fall behind government, which, with manufacturing, generally ranked fourth or fifth in salaries for the 25 positions.

Companies in banking and financial services generally tend to pay the second highest salaries; the field ranked first or second for 16 of the 25 positions. Insurance companies tended to rank third. This pecking order of pay by industry agrees with last year's Computerworld/DPMA survey.

The range of salaries among industries can be significant, even within the commercial sector. At \$67,700, the average pay for MIS directors at utilities is 22% greater than in wholesale and retail trade. For senior systems analysts, the average salary at utilities is 20% greater than in trade and 16% greater than in banking and financial services.

Along with different perceptions of the value of information systems, variations Continued on page 76

Average salaries and incentives by job title

,	Average annual salary	Average additional compensation	Average number of years of DP experience
MIS/DP management pos	itions		
Vice-president, information systems	\$79,249 (193) ¹	\$13,611 (135)	16.5 (196)
MIS director	\$57,966 (682)	\$6,364 (423)	14.5 (678)
OP manager	\$48,154 (502)	\$3,779 (299)	11.2 (486)
End-user support			
Information center manager	\$45,748 (170)	\$2,771 (87)	9.5
Information center specialist	\$32,228 (226)	\$1,570 (105)	5.6 (221)
PC manager	\$34,870 (173)	\$1,884 (80)	6.2
Communications professi		(00)	(100)
Communications manager	\$50,318	\$3,999	11.5
Communications specialist	\$35,736	\$2,328	7.2
ystems and programmin	(193)	(90)	(189)
Systems and	\$49,233	\$4,079	11.9
programming manager	(410)	(205)	(391)
Project manager	\$47,779 (231)	\$3,358 (113)	10.5 (215)
Project leader	\$43,278 (221)	\$2,965 (101)	9 (197)
Senior systems analyst	\$40,552 (307)	\$2,990 (171)	8.9 (364)
Junior systems analyst	\$33,121 (161)	\$2,115	5.2 (144)
Senior programmer/ analyst	\$35,803 (584)	\$1,872 (253)	7.2 (551)
Junior programmer/ analyst	\$29,216 (360)	\$1,692 (157)	3.7 (332)
Senior programmer	\$31,488 (281)	\$1,523** (126)	5.5 (266)
Junior programmer	\$24,362 (320)	\$1,567 (125)	2.3
Technical services and or	erations pers	onnel	
Technical services manager	\$51,404 (241)	\$3,844 (114)	12.6
Senior operating systems programmer	\$43,508 (247)	\$2,251 (98)	9.9 (235)
Junior operating systems programmer	\$32,683 (164)	\$1,240 (67)	5.1 (153)
Data center operations manager	\$38,480 (420)	\$2,588	11 (400)
Data center shift supervisor	\$29,319 (328)	\$1,358 (134)	7.4
Word processing supervisor	\$29,604 (104)	\$1,758 (50)	(305) 8 (99)
Database group	(104)	(50)	distriction of the second section of the second
Database manager or	\$48,676	\$3,516	10.2
Database analyst	(174) \$41,215	\$2,192	(168)
PERCHASTING STATES	(134)	(61)	(127)

¹ Parentheses indicate number of responses for each item

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The second annual Computerworld/DPMA salary survey was conducted in June by the Research Services division of IDG Communications, Inc.

The survey was mailed to 7,000 people selected from DPMA membership, top computer executives listed in the "Applied Computer Research" directory and *Computerworld* subscribers with titles of vice-president, assistant vice-president, director, manager and MIS or DP supervisor.

With 1,269 completed questionnaires returned by the deadline, the mailing generated a response rate of 18.1%. Readers should be cautious about interpreting average figures based on fewer than 20 responses.

Manufacturing, insurance, banking managers top earnings list; education lags

Average salaries by industry

	Total	Banking/ Financial	Insurance	Government	Wholesale/ Retail	Education	Utilities	Manufacturing	Other ³
MIS/DP management po	eitions								
Vice-president, information systems	\$79,249 (193) ¹	\$72,144 (45)	\$81,714 (35)	\$75,187 (16)	\$78,650 (24)	\$69,500 (8)	NA ²	\$87,692 (26)	\$78,156 (32)
MIS director	\$57,966 (682)	\$63,651 (41)	\$60,842 (33)	\$57,656 (90)	\$55,382 (94)	\$50,473 (83)	\$67,700 (20)	\$59,034 (193)	\$58,917 (127)
DP manager	\$48,154 (502)	\$48,187 (38)	\$51,906 (32)	\$50,703 (58)	\$46,077 (69)	\$39,842 (33)	\$61,000 (18)	\$47,378 (155)	\$48,702 (95)
End-user support		7					occura in		
Information center manager	\$45,748 (170)	\$48,094 (16)	\$47,502 (19)	\$45,953 (29)	\$40,975 (20)	\$37,571 (14)	\$53,167 (9)	\$47,473 (37)	\$45,200 (25)
Information center specialist	\$32,228 (226)	\$34,389 (18)	\$30,631 (20)	\$33,626 (31)	\$31,065 (23)	\$26,306 (31)	\$42,062 (8)	\$32,508 (51)	\$33,837 (43)
PC manager	\$34,870 (173)	\$36,500 (20)	\$36,107 (14)	\$37,655 (29)	\$35,133 (15)	\$27,432 (22)	NA	\$34,883 (30)	\$33,833 (36)
Communications profes	sionals								
Communications manager	\$50,318 (140)	\$55,795 (22)	\$54,688 (16)	\$50,442 (26)	\$47,864 (11)	\$41,889 (9)	NA	\$48,321 (28)	\$49,250 (22)
Communications specialist	\$35,736 (193)	\$37,391 (23)	\$35,079 (19)	\$36,269 (35)	\$36,025 (20)	\$28,147 (17)	NA	\$36,600 (41)	\$36,933 (30)
Systems and programmi	ng personnel								
Systems and programming manager	\$49,233 (410)	\$53,306 (36)	\$51,757 (37)	\$48,530 (58)	\$45,054 (56)	\$43,561 (33)	\$56,900 (20)	\$47,897 (102)	\$52,247 (68)
Project manage:	\$47,779 (231)	\$47,067 (30)	\$49,380 (25)	\$46,548 (42)	\$45,947 (19)	NA	\$52,250 (14)	\$47,454 (54)	\$48,725 (40)
Project leader	\$43,278 (221)	\$43,457 (23)	\$42,188 (24)	\$41,833 (36)	\$41,972 (24)	\$39,833	\$47,176 (17)	\$43,356 (45)	\$44,857 (42)
Senior systems analyst	\$40,552 (387)	\$40,706 (31)	\$41,403 (31)	\$40,043 (58)	\$39,500 (42)	\$36,208 (24)	\$47,295 (22)	\$39,764 (108)	\$41,848 (69)
Junior systems analyst	\$33,121 (161)	\$33,923 (13)	\$31,526 (19)	\$32,456 (34)	\$33,077 (13)	\$31,500 (11)	\$39,179 (14)	\$32,300 (33)	\$33,250 (24)
Senior programmer/ analyst	\$35,803 (584)	\$36,520 (50)	\$37,809 (45)	\$34,829 (73)	\$34,649 (74)	\$31,512 (42)	\$41,310 (21)	\$35,773 (175)	\$36,956 (102)
Junior programmer/ analyst	\$29,216 (360)	\$29,474 (34)	\$30,012 (34)	\$28,625 (48)	\$27,687 (42)	\$25,810 (29)	\$34,781 (16)	\$28,819 (94)	\$30,737
Senior programmer	\$31,488 (281)	\$34,381 (21)	\$33,018 (28)	\$30,928 (40)	\$29,438 (40)	\$27,588 (17)	\$34,944 (18)	\$30,826 (66)	\$32,441 (51)
Junior programmer	\$24,362 (320)	\$25,623 (31)	\$25,897 (29)	\$24,564 (39)	\$22,818	\$21,417	\$27,472	\$23,905 (79)	\$24,600
Technical services and o			The same						
Technical services manager	\$51,404 (241)	\$56,244 (25)	\$51,543 (23)	\$48,642	\$49,420 (30)	\$42,415 (13)	\$59,654 (13)	\$51,240 (52)	\$52,562 (48)
Senior operating systems programmer	\$43,508 (247)	\$46,519 (26)	\$43,710 (27)	\$42,469 (40)	\$43,220 (25)	\$36,639 (18)	\$49,333 (12)	\$42,851 (61)	\$45,058
Junior operating systems programmer	\$32,683 .(164)	\$37,395 (19)	\$34,933 (15)	\$33,739	\$27,196	\$30,800	\$37,318 (11)	\$30,763 (38)	\$33,460
Data center operations manager	\$38,480 (420)	\$43,759 (41)	\$43,071 (35)	\$38,602 (54)	\$35,152 (62)	\$33,303	\$51,286 (14)	\$36,902 (108)	\$38,61
Data center shift supervisor	\$29,319 (328)	\$29,816 (38)	\$30,679 (28)	\$29,957 (47)	\$26,442 (43)	\$23,091	\$59,833 (15)	\$27,122 (78)	\$27,342 (57)
Word processing supervisor	\$29,604 (104)	\$34,400 (10)	\$28,818 (11)	\$26,200 (20)	\$32,500 (8)	\$26,840 (10)	NA	\$27,559 (17)	\$29,778
Database group									
Database manager or administrator	\$48,676 (174)	\$58,250 (14)	\$46,928 (20)	\$48,036 (35)	\$48,192 (13)	\$42,182 (15)	\$50,615 (13)	\$48,578 (32)	\$48,828 (32)
Database analyst	\$41,215 (134)	\$48,045 (11)	\$41,625	\$37,778 (27)	\$42,687	NA	\$37,858 (12)	\$41,368 (19)	\$42,37

¹ Parentheses indicate number of responses for each item ² NA indicates seven or fewer responses for this item ³ "Other" category includes industries with insufficient responses, such as health care, law and transportation

Survey

CONTINUED FROM PAGE 74

in pay for DP personnel stem from industrywide pay patterns, according to consultants.

"A utility is a monopoly and has a guaranteed rate of return set by regulators," Connell says. "They are allowed to make a percentage of their money after they have paid all their expenses, so they've never felt the pressure of competition to keep their pay raises in line."

With their stable, conservative nature, "utilities have a lot of people there a long time doing the same jobs," says Steve Joffe, a vice-president at recruiting firm Source EDP.

Paying the price

In addition to compensating workers for this experience, utilities might pay a premium to help retain the workers, since the companies' slow growth can limit career opportunities, Joffe adds. "They might give them 'golden handcuffs'—salaries beyond what their skill set would give them on the open marketplace," he says.

On the other hand, relatively low salaries in wholesale and retail trade reflect the thin profit margins for companies in the industry, says Robert Glass, a vice-president at recruiting firm Robert Half

International, Inc. in San Francisco. "They're used to watching expenses very carefully." he says.

Employers sometimes offset relatively low salaries with noncash benefits, and retailers often do so with store discounts, says John Yurkutat, a compensation specialist at consulting firm Hay Group, Inc. in Philadelphia. "If you believe that the marketplace ultimately is self-correcting, then there's got to be something there; if there weren't, everyone would leave the wholesale and retail trade industry," he

But sometimes benefits seem to reinforce discrepancies in salaries instead of offset them. In the survey, managers in education reported the greatest number of vacation days — an average of 20 — somewhat compensating for their loway. But next comes the well-paid managers at utilities, with 18 days, while those in wholesale and retail trade, lagging in pay, also reported the fewest vacation days, 14.3.

Regions

Metropolitan areas ranking high in DP salaries also come with high living costs, but the variations in salary can fall far short of differences in real estate prices. That situation might explain discrepancies between rankings of average salaries for MIS directors by region compared Continued on page 78

Top dollars MIS director salaries by metropolitan area



CW CHART

Big firms pay big bucks

he big bucks are paid by larger employers, according to this year's Computerworld/DPMA salary survey.

The survey compared salaries among organizations of three sizes: those with annual revenue of less than \$50 million to \$499 million and \$500 million or more.

Among 25 positions examined, there are only two exceptions to the rule of bigger pays better. One is database analyst, where small organizations pay the most, followed by large ones. The other is communications manager, where the small organizations pay more than the mid-size ones.

But just because larger organizations tend to pay more for a particular position does not mean an individual would earn more by going to work for one. That is because organizations of different sizes do not always employ similarly skilled people. The employees at the larger organizations surveyed tend to be more experienced than those at smaller ones.

In all but seven job categories, the employees of the large organizations have, on average, more years of relevant experience than those at the midsize organizations, and those at the midsize organizations have more years than the employees of the small organizations (see chart page 78).

Furthermore, nonmonetary benefits may offset lower pay. "Smaller companies often offer employees intangible rewards," said John Yurkutat, a compensation specialist at consulting firm Hay Group, Inc. in Philadelphia. "In general, smaller organizations tend to be entrepreneurial. They tend to have less rigid structures and procedures, which allows for more creativity and flexibility. For some DP folks, that's a big thing."

Broader responsibilities are another consideration, noted Peter Tamblyn of consulting firm Edward Perlin Associates, Inc. in New York. "In the small shop, you're probably looking at peo-

ple who wear more hats than someone in a larger one. They might find it more interesting," he said.

The variations in pay among firms of different sizes are much more significant for managerial positions than for professional ones. For example, the average compensation for senior systems analysts at large companies exceeds the average at small ones by \$5,252, or 13%. For MIS directors, the average compensation at large firms is \$31,321, or 59%, greater than at smaller ones.

"It takes many more years to become a vice-president of MIS at a larger company than a small one," Tamblyn explained. "The lead technical person in a small company could be promoted to DP manager. In a larger company, he would be three levels away, with no training for it."

It's not just a question of experience either, said M. Victor Janulaitis, president of Positive Support Review, Inc. in Los Angeles. Programming and other professional work tends to be similar at organizations of different size, but management is more challenging at larger ones. "There are a lot of people who can run 30- and 40-person departments," Janulaitis said. "There's another set of management skills you need in a megaproject environment."

In grading their compensation and benefits on a scale of one to four, with one indicating "poor" and four "excellent," senior managers reported no significant differences. On average, respondents at smaller firms — who reported average annual compensation for MIS directors of \$52,345 — rated their own renumeration between "fair" and "good" at 2.79.

The respondents at large organizations — where the compensation for MIS directors averages \$83,666 rated their packages at 2.78. Those at mid-size organizations — where MIS directors' pay averages \$66,997 weighed in with a rating of 2.76.

DAVID A. LUDLUM

Do you get a fair deal?

Respondents in the banking and finance industry are the most likely to rate their compensation as good to excellent; those in education are the least likely to do so

	Banking/ Financial	Insurance	Government	Wholesale/ Retail	Education	Utilities	Manufacturing	Other
Discollent	18.9%	15.1%	7.6%	9.4%	10.2%	25%	12.8%	21.1%
Good	61.3%	58.1%	52.7%	56.7%	43.3%	52.5%	60.6%	46.8%
Fair	17.1%	24.4%	34.4%	28.1%	34.6%	22.5%	24.1%	26.6%
Poor	2.7%	2.3%	5.3%	5.8%	11.8%	0	2.6%	5.5%

The highest salary satisfaction rating in terms of metropolitan region was for the Northern California/Bay Area; the lowest was for Houston/Dallas/Fort Worth

	Atlanta	Baltimore/ Washington, D.C.	Boston	Chicago	Houston/ Dallas/ Fort Worth	Denver	Los Angeles/ San Diego	Minneapolis/ St. Paul	New York	Northern California/ Bay Area
Directions	12.1%	16.7%	15.8%	8.4%	15.4%	23.4%	12.9%	12.4%	7.9%	17.9%
Good	55.6%	52.8%	52.6%	62.9%	47.9%	46.9%	51.8%	56.6%	63.5%	53.8%
Fair	25.3%	26.9%	30.7%	27.3%	27.4%	23.4%	30.6%	25.6%	23%	23.9%
Poor	7.1%	3.7%	0.9%	1.4%	9.4%	6.3%	4.7%	5.4%	5.6%	4.3%

CW CHAI

Big Apple, Silicon Valley pay top dollar in most categories; Boston, Chicago keep pace

Average salaries by metropolitan region

	Total	Atlanta	Baltimore/ Washington, D.C.	Boston	Chicago	Houston/ Dallas/ Fort Worth	Denver	Los Angeles/ San Diego	Minneapolis/ St. Paul	New York	Northern California Bay Area
MIS/DP manageme	nt position	THE REAL PROPERTY.				Mark 1918				265	
Vice-president, information systems	\$79,249	\$76,000	\$78,091	\$84,474	\$83,000	\$80,477	\$66,441	\$72,430	\$81,083	\$85,455	\$84,706
	(193) ¹	(10)	(22)	(19)	(19)	(22)	(17)	(27)	(18)	(22)	(17)
MIS director	\$57,966	\$51,589	\$61,685	\$57,901.	\$57,104	\$53,167	\$53,581	\$62,201	\$52,108	\$66,193	\$62,278
	(682)	(56)	(54)	(71)	(85)	(60)	(74)	(85)	(63)	(70)	(63)
DP manager	\$48,154	\$46,085	\$52,171	\$45,106	\$47,039	\$49,564	\$42,654	\$51,410	\$43,980	\$51,839	\$51,329
	(502)	(27)	(41)	(52)	(59)	(39)	(58)	(68)	(49)	(59)	(48)
End-user support											
Information center manager	\$45,748	\$40,269	\$46,083	\$46,308	\$43,650	\$47,108	\$41,293	\$52,719	\$42,061	\$50,235	\$48,900
	(170)	(13)	(24)	(13)	(20)	(14)	(21)	(16)	(17)	(17)	(15)
Information center specialist	\$32,228	\$28,000	\$32,188	\$30,917	\$32,139	\$32,556	\$28,157	\$34,844	\$31,585	\$33,685	\$35,800
	(226)	(13)	(24)	(18)	(18)	(18)	(28)	(32)	(25)	(27)	(23)
PC manager	\$34,870	\$30,682	\$39,618	\$34,667	\$35,250	\$28,833	\$29,780	\$34,283	\$34,227	\$38,643	\$41,700
	(173)	(11)	(17)	(18)	(20)	(12)	(25)	(23)	(11)	(21)	(15)
Communications pr											
Communications	\$50,318	\$42,278	\$51,974	\$51,273	\$50,542	\$55,600	\$42,763	\$53,594	\$54,045	\$50,316	\$52,107
manager	(140)	(9)	(19)	(11)	(12)	(10)	(19)	(16)	(11)	(19)	(14)
Communications specialist	\$35,736	\$31,406	\$36,667	\$35,821	\$34,974	\$33,000	\$30,496	\$40,880	\$36,781	\$38,250	\$38,959
	(193)	(16)	(21)	(14)	(19)	(17)	(26)	(25)	(16)	(16)	(22)
American conformation and when	eriorista de la compansa de la comp	· Market Wilder	an ika pisara, ta	earlight on the same	والمالة الله المناسب	· work	the state of				
Systems and programming manager	\$49,233 (410)	\$44,339 (28)	\$50,592 (38)	\$48,654 (39)	\$48,520 (51)	\$48,319 (36)	\$44,367	\$55,592 (52)	\$46,446 (41)	\$52,756	\$50,596
Project manager	\$47,779	\$43,187	\$50,259	\$47,741	\$48,981	\$45,750	\$43,500	\$52,274	\$42,353	\$48,129	\$48,816
	(231)	(8)	(27)	(29)	(27)	(18)	(24)	(31)	(17)	(31)	(19)
Project leader	\$43,278 (221)	\$41,286 (14)	\$44,135 (26)	\$41,880 (25)	\$42,750 (20)	\$39,895 (19)	\$40,214	\$49,172 (29)	\$40,348 (23)	\$44,220 (25)	\$45,944 (18)
Senior systems analyst	\$40,552 (387)	\$36,318 (22)	\$41,859 (39)	\$39,875 (44)	\$39,903 (56)	\$37,878	\$37,898	\$43,450 (50)	\$37,957 (42)	\$43,569 (36)	\$45,400 (30)
Junior systems	\$33,121	\$31,586	\$34,192	\$33,361	\$31,924	\$34,750	\$30,962	\$34,118	\$32,214	\$31,700	\$36,607
analyst	(161)	(14)	(26)	(18)	(17)	(8)	(13)	(17)	(14)	(20)	(14)
Senior programmer/	\$35,803	\$32,322	\$37,054	\$34,570	\$34,462	\$34,810	\$33,824	\$40,353	\$32,549	\$38,250	\$39,940
analyst	(584)	(45)	(46)	(56)	(79)	(50)	(71)	(75)	(61)	(46)	(53)
Junior programmer/	\$29,216	\$25,750	\$28,859	\$28,510	\$29,324	\$28,585	\$28,257	\$31,878	\$26,651	\$31,043	\$33,055
analyst	(360)	(22)	(39)	(48)	(43)	(26)	(39)	(46)	(43)	(23)	(31)
Senior programmer	\$31,488	\$28,457	\$31,143	\$30,000	\$29,851	\$30,088	\$30,884	\$34,214	\$29,787	\$33,984	\$37,079
	(281)	(23)	(28)	(31)	(37)	(17)	(30)	(35)	(30)	(31)	(19)
Junior programmer	\$24,362	\$23,118	\$25,190	\$25,048	\$23,833	\$23,762	\$23,166	\$24,721	\$23,282	\$25,014	\$27,024
	(320)	(17)	(29)	(31)	(54)	(21)	(29)	(43)	(39)	(35)	(21)
Technical services			n d								
Technical services manager	\$51,404	\$45,816	\$53,326	\$48,435	\$50,946	\$50,167	\$45,472	\$58,836	\$51,358	\$54,462	\$53,135
	(241)	(19)	(23)	• (23)	(28)	(24)	(23)	(25)	(24)	(26)	(26)
Senior operating systems programmer	\$43,508	\$39,112	\$44,229	\$40,200	\$44,020	\$41,877	\$42,207	\$46,829	\$38,813	\$45,442	\$48,875
	(247)	(16)	(24)	(25)	(30)	(19)	(24)	(35)	(24)	(26)	(24)
Junior operating systems programmer	\$32,683	\$28,125	\$32,944	\$30,725	\$32,079	\$33,727	\$35,692	\$33,950	\$28,263	\$33,806	\$39,000
	(164)	(12)	(18)	(20)	(19)	(11)	(13)	(20)	(19)	(18)	(14)
Data center operations manager	\$38,480	\$34,427	\$43,367	\$37,649	\$36,145	\$36,820	\$36,044	\$42,882	\$35,081	\$41,238	\$41,903
	(420)	(26)	(30)	(47)	(55)	(44)	(45)	(51)	(42)	(42)	(36)
Data center shift supervisor	\$29,319 (328)	\$26,119 (21)	\$28,747 (34).	\$28,188 (40)	\$26,417 (42)	\$36,783	\$25,468 (25)	\$31,263 (38)	\$27,104 (28)	\$30,256 (43)	\$32,056
Word processing supervisor	\$29,604 (104)	NA ²	\$29,654 (13)	NA	\$23,627 (11)	\$26,450 (12)	\$26,067 (15)	\$42,192 (13)	NA	\$30,115 (13)	\$30,556 (9)
Database group Database manager or administrator	\$48,676 (174)	\$46,000	\$49,407 (27)	\$51,357 (14)	\$47,556 (19)	\$45,269 (12)	\$43,991 (28)	\$53,316 (19)	\$46,208 (12)	\$50,438 (16)	\$54,679 (14)
Database analyst	\$41,215 (134)	\$35,050 (10)		\$37,929 (14)	\$41,423 (13)		\$40,211 (19)	\$48,967 (15)	\$35,500 (9)	\$47,900 (10)	\$48,545 (11)

¹ Parentheses indicate number of responses for each item
NA indicates seven or fewer responses for this item

Survey

CONTINUED FROM PAGE 76

with the satisfaction that senior MIS managers express with their compensation (see chart page 76).

Among 10 areas, Los Angeles/San Diego ranked third in average salary for MIS directors, and Denver ranked seventh.

their compensation and benefits, senior MIS managers from Denver chalked up the highest average rating, while those from Los Angeles and San Diego rated eighth place.

At \$62,201, the average MIS director salary for Los Angeles and San Diego outstripped the average for Denver by 16%. But the median cost of a single-family home in Los Angeles earlier this year was

But in expressing satisfaction with \$159,900, according to the National Association of Realtors. That exceeds the comparable cost in Denver, \$83,700, by 91%.

> This finding reflects the notion that there is more to job satisfaction than salaries and benefits.

Next week, Computerworld will look at some of these other factors in reporting the results of its second annual job satisfaction survey.

CALENDAR SEPT. 11-17

Conference On Computing in Civil Engineering and Symposium On Expert Systems in Civil Engineering. Atlanta, Sept. 11-13 — Contact: Thomas O. Barwell Jr., agenda chairman, Soth Conference on Computing In Civil Engineering, Environmental Research Labcory, U.S. EPA, College Station Road, Athens, Ga.

Midwest DB-DC Users Group Annual Meeting. Grand Rapids, Mich., Sept. 11-13 — Contact: Midwest DB-DC Users Group, c/o Loretta T. Kobler, Arthur Andersen & Co., Rm. 532, 9 W. Washington, Chicago, Ill. 60602.

National Computer Graphics Association Map-ping & Geographic Information Systems '88. Or-lando, Fla., Sept. 12-15 — Contact: National Computer ion, Suite 200, 2722 Merrilee Drive, Fairfax, Va. 22031.

FOC/LAN 88, International Fiber-Optic Commu-nications and Local-Area Networks Exposition. Atlanta, Sept. 12-16 — Contact: Information Gatekeepers, 214 Harvard Ave., Boston, Mass. 02134.

Data Storage Forum. San Jose, Calif., Sept. 13-15 — Contact: Carthidge & Associates, Suite 202, 3097 Moor-park Ave., San Jose, Calif. 95128.

International Conference and Exposition of Mu-chine Perception Technology. Chicago, Sept. 13-15 — Contact: Expocon Management Associates, 3695 Post Road, Southport, Conn. 06490.

Ashton-Tate Developer Conference. Los Angeles, Sept. 13-16 — Contact: Ashton-Tate, 20101 Hamilton Ave., Torrance, Calif. 90502.

d Market Data Conferen Sept. 14 — Contact: Waters Information Services, P.O. Box 2248, Binghamton, N.Y. 13902.

EFT Association CAN/AM Conference. Toronto, Sept. 14-16 — Contact: Electronic Funds Transfer Association, Suite 1000, 1726 M St., N.W., Washington, D.C.

octrum '88. Phoenix, Sept. 14-16 - Contact: Graphic Communications Association, Suite 604, 1730 N. Lynn St., Arlington, Va. 22209.

Voice-Interactive Computer Conferences and Exhibitions. San Francisco, Sept. 14-16. — Contact: Media Dimensions, 42 E. 23rd St., New York, N.Y. 10010.

Seybeld Desktop Publishing Conference. Santa Clara, Calif., Sept. 14-17 — Contact: Seybold Seminars, 6922 Wildlife Road, Malibu, Calif. 90265.

ence. Chicago, Sept. 15-18 — Contact: Black Data Processing Associates, P.O. Box 7466, Philadelphia, Pa.

Applefest. San Francisco, Sept. 16-18 — Contact: Cambridge Marketing, One Forbes Road, Lexington, Mass.

SEPT. 18-24

Toner & Developer Industry Conference. Santa Barbara, Calif., Sept. 18-20 — Contact: Diamond Research Corp., P.O. Box 128, Oak View, Calif. 93022.

Annual Conference of the Standards Engineering Society. Dayton, Ohio, Sept. 19-21 — Contact: SES-Dayton Section, P.O. Box 2317, Dayton, Ohio 45420.

al Conference. Denver, Sept. 19-21 -Contact: Sukan Makmuri, US West, Room 950, 2CPP, 100 S. 19th St., Omaha, Neb. 68102.

Performance/Capacity Management Tutorial
Week. Chicago, Sept. 19-22 — Contact: Institute for Information Management, Suite 230, Pruneyard Tower,
1901 S. Bascom Ave., Campbell, Calif. 95008.

Policy Management Systems Corp. Customer Conference. Columbia, S.C., Sept. 19-22 — Contact: Policy Management Systems Corp., One PMS Center,

wcase Conference III. CASE Tools: The Future of Applications Development. St. Louis, Sept. 20-21
— Contact: Donna Skaggs, Conference Coordinator, Washington University, Campus Box 1141, One Brookings CWCHART Drive, St. Louis, Mo. 63130.

Does the size of your company matter?

Salary and years of experience of MIS personnel by company size

	Less than	\$50 million to	More than
	\$50 million	\$499 million	\$500 million
MIS/DP management positions		Carry Asia	
Vice-president information systems Years of experience	\$63,414 (63) ¹	\$78,611 (63)	\$98,237 (57)
	14.7	16.9	19
MIS director Years of experience	\$48,781 (240)	\$59,799 (277)	\$73,836 (109)
	13.5	15.4	15.1
DP manager	\$41,489 (169)	\$47,231 (186)	\$59,536 (111)
Years of experience	11.3	10.5	12.2
End-user support			
Information center manager Years of experience	\$41,818 (30)	\$42,655 (59)	\$51,151 (63)
	9.8	8.8	10.2
Information center specialist Years of experience	\$27,511 (55)	\$31,433 (85)	\$37,231 (65)
	4.8	5.6	6.3
Personal computer manager Years of experience	\$29,236 (53)	\$35,836 (64)	\$40,163 (46)
	4.9	5.7	8
Communications professionals			
Communications manager Years of experience	\$50,925 (20)	\$44,330 (44)	\$55,151 (63)
	9.3	10.2	13.4
Communications specialist Years of experience	\$32,125 (28)	\$32,725 (71)	\$39,526 (78)
	7.5	6.5	7.8
Systems and programming manager Years of experience	\$42,647 (109)	\$48,670 (162)	\$56,276 (114)
	11	11.6	13
Project manager	\$45,314 (35)	\$46,171 (85)	\$50,659 (91)
Years of experience	10.4	11.1	10
Project leader Years of experience	\$40,653 (36)	\$41,943 (70)	\$45,484 (91)
	8.1	9	9.7
Senior systems analyst Years of experience	\$39,498 (82)	\$39,485 (161)	\$43,408 (114)
	9.1	&8	9.1
Junior systems analyst Years of experience	\$30,138 (29)	\$31,605 (56)	\$36,198 (58)
	4.4	5	5.8
Senior programmer/analyst	\$34,267 (146)	\$35,539 (264)	\$38,667 (129)
Years of experience	7	7.3	7.5
Junior programmer/analyst Years of experience	\$26,847 (96)	\$29,329 (142)	\$31,679 (96)
	3.2	3.8	4.2
Senior programmer Years of experience	\$29,277 (65)	\$30,752 (109)	\$33,317 (84)
	5	5.6	5.6
Junior programmer Years of experience	\$22,728 (90)	\$24,202 (113)	\$26,262 (86)
	2.4	2.2	2.5
Technical services and operations personnel	The Chillian Chillian	Make De Tracker	
Technical services manager Years of experience	\$46,727 (33)	\$48,194 (107)	\$57,757 (86)
	10.1	12.2	14.5
Senior operating systems programmer Years of experience	\$39,469 (40)	\$41,935 (109)	\$47,376 (82)
	9.7	9.1	10.9
Junior operating systems programmer Years of experience	\$28,852 (27)	\$30,558 (69)	\$36,695 (59)
	3.9	4.8	5.9
Data center operations manager	\$31,336 (107)	\$37,860 (192)	\$47,901 (92)
Years of experience	9.9	11.1	12.6
Data center shift supervisor Years of experience	\$23,477 (84)	\$27,935 (140)	\$37,706 (85)
	6	7.7	8.8
Word processing supervisor Years of experience	\$27,363 (30)	\$28,310 (40)	\$35,357 (28)
	6.5	8.2	9.4
Database group			
Database manager or administrator Years of experience	\$40,369 (25)	\$46,114 (59)	\$53,001 (77)
	7.1	10.1	11.3
Database analyst	\$44,306 (18)	\$37,806 (36)	\$42,276 (68)
Years of experience	6.4	7.1	7.6

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Gilliam

FROM PAGE 73

· More laboratory activity. Henderson's report con-cluded, "The lack of qualified faculty and resources are a present reality. If the academic world is going to overcome this shortage, we need some boot-

strap pulling." What can or should the business community be doing to help solve some of these serious problems in academia?

I first recommend that every MIS organization establish a direct link with at least one, or preferably several, colleges and universities.

These may be chosen because of geographic proximity, recruiting potential or some other relationship.

It is vital that the MIS manager become personally acquainted with the computer science or information systems department head and some of the faculty. Two-way communication can then uncover problems and opportunities for involvement by the supporters. Just taking the time to show interest can have a tremendous encouragement value.

Look to business

Businesses have a lot of resources available with which to help the colleges. For example, inviting the faculty in for a tour and discussion of current projects and activities can help the faculty relate its teaching to the real world.

Businesses can offer to teach courses, make presentations or allow student groups to tour a computing facility.

Summer jobs, of course, are a way to assist the students. Many faculty members could be helped financially with a summer assignment as well as learn from the business and make a contribution.

Financial support is of major importance. Many corporations establish funds for support of colleges. The MIS manager should ensure that a fair share is going to institutions where the support will benefit the computer science and information systems departments.

In the past, many companies donated obsolete hardware to universities. But how can the institutions hope to teach current technology if all they have to work with is outdated equipment? They need help in acquiring useful, up-to-date resources, and that takes money.

Perhaps the most important steps businesses can take to help the academic institutions upgrade its information technology resources fall in the category of "lobbying." The starting place is with the institution administration, or more specifically, the university president. It is a mistake to assume that the president understands the importance of information technology to the business world. He may need a refresher on where to place the priority for funds and faculty for the computer science and information systems departments.

Businesses can also help public institutions by informing elected government officials of the importance of supporting

education financially and how it has a direct effect on local hiring

Approaching hardware and software manufacturers to contribute or loan products to the colleges is another way to help. It would be in their own self-interest to do so, since familiarity with their products by faculty and students has a promotional

Another idea is the Business **Education Support Team** (BEST). The chairman of the computer science or information systems department could invite MIS managers to be a part of a mutual support organization. The BEST group would meet at least annually on-campus to review the status of the curriculum and facilities. The business reps would offer suggestions for im-

provement of the program and how to obtain the needed re-

Imagination should indicate the potential value of the BEST organization to both academia and business. After all, they need each other to succeed.

Gilliam is president of Gilliam Associates, a computer and management consulting firm based in Ponca City, Okla.

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DP veteran

FROM PAGE 73

mix of DEC VAXs - sporting 100 times the power of those early computers. In addition, he has about 600 IBM Personal Computers and Apple Computer, Inc.

During those 30 years, Davis has zigzagged across the country and through a spectrum of computer-related positions.

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He has a stack of sheepskins, attesting to a bachelor's and master's degree in mathematics earned at the University of Texas, along with a master's degree in computer science awarded by Carnegie-Mellon University. The degrees are complemented by a healthy dose of operational and managerial experience.

Davis came to Hughes in 1983 as the system director in charge of engineering computing, very large-scale integration and technical support. About 10 months later, he moved into facilities management for Hughes' Corporate Group, managing about 150 personnel. From there he rose to director of DP, overseeing 200. Six months later, Hughes added the corporate computer center and telecommunications group to his duties.

Hughes has since decentralized to the point where Davis has 450 direct reports but only about 30 people supporting his organization. Since 1984, he has continued to oversee the same units, with the exception of facilities management, and has added terminal and PC acquisition for the Corporate Group, local information system quality control and end-user computing, services and support.

That decentralization means that Davis concentrates on his immediate group and on intrasite connectivity, which he cites as one of MIS's biggest challenges. "The end-user computing area is where you get a lot of new things. The users have gone out and installed all different kinds of computers, and what we try to do is integrate the equipment into the company computing picture where possible not try to take over.

The customer is always right

When it comes to users, Davis is a little old-fashioned, insisting that service organizations such as his are right only when the customer thinks they are. "You have to bend over backward to make sure the user is satisfied on his terms and not fall into a technical evaluation of what the user ought to do. In most cases, you'll be he says.

His biggest challenge has been to manage four different networks — X.25. IBM's Systems Network Architecture, "the largest single-address Ethernet in the world" and a telecommunications sys-

tem that he rebuilt.

The problem was to imbue the kinds of discipline and scientific thinking and applications development processes long used in computing into the telecommunications group. Part of the difficulty lies in the dearth of people with degrees in telecommunications management and technology, he says. Consequently, he hires the best he can find, trains them and sets up "tiger teams," in which people from several organizations are given a specific deliverable with a specific deadline.

As for the future, Davis notes a strong personal interest in local-area networks and PCs. "We have to find a way to do distributed processing, to bring cooperative processing into the mainstream of MIS," he says. The goal, he adds, is to bring "these giant data flows to bear on the desktop." And the key lies in emerging technologies.

After 30 years. Davis revels in the changes - the hardware is faster, technology is no longer for the elite and more people are impacted — by many orders of magnitude. "The emphasis has changed from merely printing checks or running simulations to being an effective part of the everyday work activity," he says.

OCA ING

NORTHEAST

ert, N.Y., Sopt. 13. Suffolk County Chapter of Data Processing Management Association. Windjammer Restaurant. "IBM AS/400." Contact: Monika MacLean, 516-385-7444

Boston, Sept. 13. New England EDP Auditors Associa-tion. Barrett's Restaurant. Contact: EDPAA, P.O. Box 516, Boston, Mass. 02102.

WEST

Los Angeles, Sept. 12. Los Angeles Chapter Data Pro-cessing Management Association. Restaurant Taix. "ABCs of Hiring and Getting Hired in Data Processing." Contact: DPMA, P.O. Box 1047, Hollywood, Calif. 90078.

Los Angeles, Sept. 14. Data Administration Management Association, Los Angeles Chapter. Sheraton Grande Hotel. Contact: Yvonne C. Cook, Senior Data Administrator, Flying Tigers, 4601 World Way West, International Airport, Los Angeles, Calif. 90009.

MIDWEST

Grand Rapids, Mich., Sopt. 11-13. Midwest Data Base and Data Communications User Group annual conference. Amway Grand Plaza Hotel. Contact: Theodore F. Rock, Harris Trust and Savings Bank, P.O. Box 755, Chicago, III. 60690.

SOUTHEAST

to. Sept. 12-14. South Association. "Positioning for Success." Marriost Mar-Contact: Carlisle Reames, SETA Public Relations, P.O. Box 210155, Columbia, S.C. 29221

MIDATLANTIC

gton, D.C. Sopt. 7-8. Capital Micro Users Forum. Washington Convention Center. Contact: National Trade Productions, Suite 400, 2111 Einenhower

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COMPUTER INDUSTRY

INDUSTRY
INSIGHT
William Zachmann

Fall to bring industry slide



Minicomputer vendors are reporting slower growth and slackening demand in the U.S. The normal

summer slowdown in personal computer sales looks like it may spread to the coming fall season. Software companies from mainframe (Cullinet) to micro (Lotus) are seeing signs of trouble. Rumors are rife of yet another round of not-really layoffs at IBM that may well be the biggest yet. Computer industry stocks are hitting levels at, or even below, those in the dark days just after the October 1987 stock market crash.

Does all this mean the party's over? Are we headed for another slump in the computer industry? Is the already strong pressure to keep MIS expenditures down going to get worse? The answers to these questions are, I fear, yes, yes and yes.

In the first place, the unprecedented expansion in the economy is generally getting long in the tooth. Signs typical of the end of a business expansion cycle are appearing. Indications of an overheating economy, rising inflation and, in response, tighter money and higher interest rates are increasing.

Second, users are starting to smarten up to the fact that many requirements for information processing that were automati-

Continued on page 91

Seagate flounders

Self-reliant buyers lay rocky road for OEM drives

BY JULIE PITTA

SCOTTS VALLEY, Calif. — Seagate Technology has hit another dip in its roller coaster history, and the firm said it may posses a loss — the first since it became a public company — in the current fiscal quarter.

Seagate's profits in its fourth quarter, ended June 30, tumbled 56% from year-earlier levels, spoiling the party as the company passed the billion-dollar milestone with sales of \$1.27 billion for the year.

Seagate's problems are not

unique. Opportunities for OEM suppliers of disk drives have decreased as larger manufacturers have opted to make their own peripherals. Hewlett-Packard Co., for example, has its own disk drive operation in Boise, Idaho, which produces 3½- and 5¼-in. rigid disk drives.

And longtime Seagate customer IBM is the largest manufacturer of 3½-in. rigid disk drives, according to market research firm Disk/Trend, Inc. The percentage of Seagate's revenue from IBM has dropped from 24% in fiscal 1987 to 13% in the year ended June 30, and it



Seagate's Shugart

dipped below 10% in the fourth quarter of fiscal 1988.

Seagate had hoped to supply IBM with 3½-in. hard disk drives for the Personal System/2. That deal never materialized.

Continued on page 89

Vendors swapping engineers

ANALYSIS

BY J. A. SAVAGE

Software and hardware companies have swapped technology in the past, but now they are swapping technologists.

Pyramid Technology Corp. announced late last month that it was sending a full-time engineer to Informix Software, Inc. During the past year, Sequent Computer Systems, Inc. has had two engineers farmed out to Oracle Corp. and Relational Technology, Inc. (RTI). Sequent will soon send an engineer to Unify Corp.

Sun Microsystems, Inc. and RTI have been in each other's shops working on windowing technology since November 1987. RTI and Apple Computer, Inc. are about to embark on a project to allow the Macintosh operating system to run a relational database.

Sequent, based in Beaverton, Ore., appears to have started the engineers' equivalent of Bob & Carol & Ted & Alice when it lent an engineer to RTI, based in Alameda, Calif., about a year ago.

The software companies' products were originally engineered to run on uniprocessors, and Sequent, which makes Unix-based parallel processing computers, wanted to ensure that the products would run equally well on a parallel processing machine, according to Kent Godfrey, Sequent's manager of segment marketing.

Continued on page 89

Olivetti over hump and regaining stride

BY ELISABETH HORWITT

MILAN, Italy — Ing. C. Olivetti & Co. appears to be bouncing back from a financially troubled 1987 with optimistic net profit projections, increased microcomputer orders from AT&T and a new product platform based on Unix and major networking standards.

In hard figures, 1987 was definitely a down year for Olivetti, which has the third largest share of the European personal computer market, according to market research firm, International Data Corp. Net income fell almost 29% from the previous year, while revenue from North America — Olivetti's largest non-European market — fell more than 40%. This was largely because of a huge drop in PC orders from AT&T, falling from 215,000 in 1986 to 44,000 last

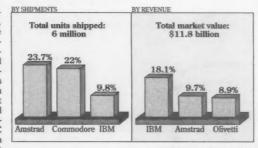
In strategic terms, however, last year was a turning point for Olivetti, company spokesman James Hansen said. Led by managing director Vittorio Cassoni, who returned to Olivetti earlier this year from being "on loan" to

AT&T as chief of its Data Systems Group, the company embarked on an aggressive campaign to become one of the three primary computer vendors in any given European country.

Continued on page 91

The PC across the sea

Olivetti had the third largest dollar share of the Western Europe microcomputer market in 1987



SOURCE: INTERNATIONAL DATA CORP

IBM W. Germany dumps XTs, ATs to boost PS/2

BY ROLAND SCHUBERT and DOROTHEA WENDELN IDG NEWS SERVICE

MUNICH, West Germany — The IBM Personal Computer AT is dead: Long live the Personal System/2.

In a move symbolic of IBM's worldwide microcomputer strategy, IBM West Germany is trying to tell dealers — and, indirectly, customers — that the time has come to say goodbye to the old world. Price cuts of as much as 40% are planned to help dealers get old PC XT Model 286 and AT computers to the

customer and off the shelf.

The goal, according to Dieter Kolb, an IBM marketing manager of West German dealer sales, is to prime the market for the fourth quarter and point it in the ultimate direction of the PS/2 product family. The move is designed "to create additional business in special market situations" in the third quarter, Kolb said.

'Old-world standards'

IBM's West German subsidiary still denies rumors that the PS/2 Model 35 will be announced soon. The Stuttgart-based subsidiary affirmed that IBM will continue to produce machines based on what it termed "oldworld standards."

However, in a letter to IBM's West German dealers, these new models with "old standards" were not mentioned. Instead, IBM advised its distributors to order the PS/2 Models 50 and 60 as follow-up models for the PC XT 286 and the AT.

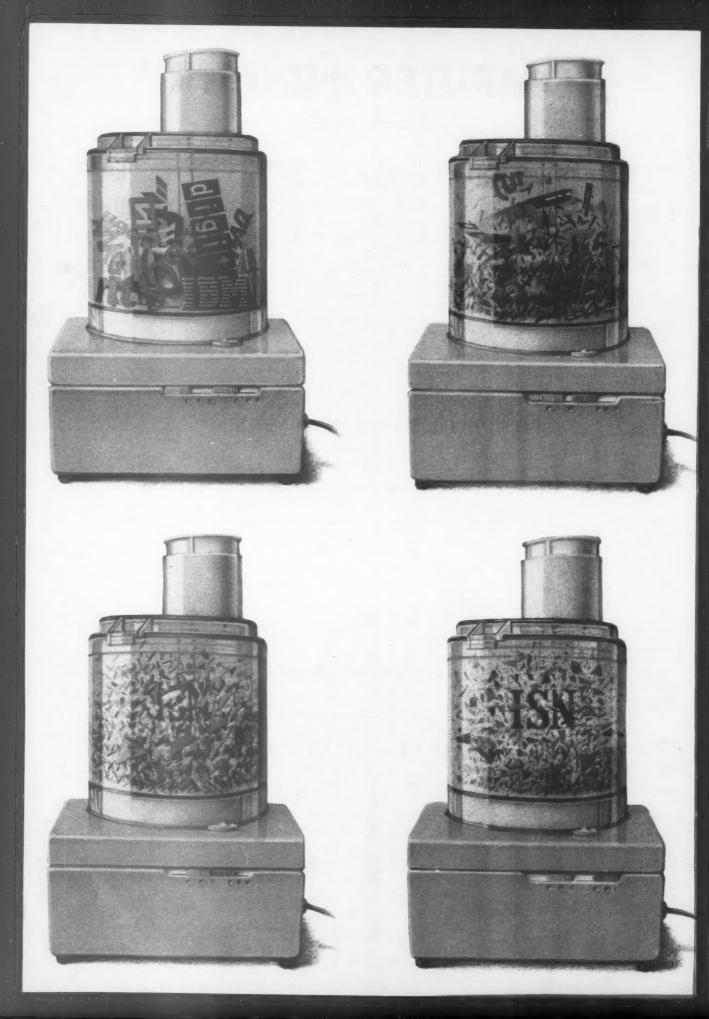
Dealers currently pay only \$1,790 for an XT 286 equipped with a Video Graphics Array (VGA) adapter and an 8512 monitor. Before the discount sales during the summer slowdown, the model cost dealers nearly \$2,370. In comparison, the PS/2 Model 30-021 is priced at \$2,000. The cost of an AT, also equipped with a VGA adapter and an 8512 monitor, plunged about 40% to bargain-basement lows of just \$2,050 instead of \$3,315.

Summer sale prices also exist for PS/2 systems. West German dealers can get discounts ranging between 4.4% and 9.1% under the listed wholesale price, including the 8512 monitor, until Sept. 30.

The price cuts apply not only to hardware; as part of this promotion campaign, operating system software is also cheaper. A 20% reduction is supposed to "prepare the ground better for growth in the new market," according to IBM.

"The fourth quarter is especially important for the transition from DOS to OS/2," Kolb said in his letter to West German

IBM said it hopes to lure dealers with an "investment guarantee." The respective OS/2 Version 1.0 can be exchanged free of charge for Version 1.1, which also includes the Presentation Manager. In addition, IBM offers a subsequent upgrade package as an easy step to OS/2 Extended Edition.



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Save your precious time and resources with AT&T's revolutionary Information Systems Network (ISN). It's designed to solve your communications problems today – and tomorrow. AT&T's ISN is based on standards.

In fact, ISN supports more standards than most networks available today from major vendors. ISN lets your micros, minis, and mainframes talk to one another – instantly and transparently. We offer vital gateways to

other vendors, as well as the speed and number of ports you need.

And we offer local and remote management. The chart below gives you all the details.

- Supported Protocols: IEEE 802.3, BSC, SNA/ SDLC, IBM 3270, HDLC, X.25 Transport.
- Network Media: Fiber optic and twisted pair.
- Host Interface: AT&T, DEC, IBM.
- Gateways and bridges to other vendors: Async hosts, AT&T STARLAN, and ETHERNET bridging, XNS, TCP/IP DECnet, 3BNET.
- Speed/ports: 8.64 Mbps backplane, 48,000 packets per second, 2500 virtual circuits per node.
- Access Method: Perfect scheduling.
- Centralized Management: StarKeeper[™] Network Management Systems.

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ISN offers superior price/performance and investment protection in a multi-vendor environment. With ISN, you can base your computer purchases on your vision of the future—not fear of the future.

If your company plans include strategic use of information in a multi-vendor environment, contact your AT&T Account Executive, Authorized AT&T Reseller, or call 1 800 247-1212, Ext. 756. From equipment to networking, from computers to communications, AT&T is the right choice.



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EXECUTIVE NER OR

Michael H. Forster has been appointed president at Prime Computer, Inc.'s general markets division and a corporate officer, the company announced. The appointments are effective immediately.

Forster succeeds W. L. "Roy" Brubaker, who will continue to report to Prime President and Chief Executive Officer Joe M. Henson as a member of the president's office.

Brubaker will assist in the integration of the sales forces and other sales-related activities resulting from the company's merger earlier this year with Computervision Corp. He will retire at the end of this year.

Forster joins Prime from IBM, where he most recently was group director of academic information systems. Prior to that, he was director of mid-range systems management.

Michael P. Richman, general manager at Wyse Technology, Inc.'s Amdek Corp. subsidiary and a Wyse vice-president, has resigned his posts.

Lawrence Lummis, a Wyse cofounder and vice-president of special projects, will take over Richman's role as Amdek president.

Richman joined Wyse in 1982 as the company's first salesman, later serving as vice-president of sales and as vice-president of marketing.

He assumed the top Amdek post in April, after the departure of H.L. "Sparky" Sparks as Amdek president and Wyse vice-president.

Dynatech Communications, Inc. announced the promotion of Pierre Bretault to the newly created position of president. Dynatech Communications International.

Bretault, in turn, has appointed Ken Gooding as president of European operations at the international division. Gooding most recently served as Dynatech's senior vice-president of marketing and sales for Communications Europe. Continued on page 88 INBRIEF

Smoke signals

Continental Information Systems Corp. is sending up sme signals that its operating results for signas that its operating results for the shortened second quarter, end-ed Aug. 31, should be a vast im-provement over the \$7.5 million loss posted in the first quarter. But the Syracuse, N.Y.-based leasing firm said the improvement will probably range from a reduction of the loss posted earlier in the year to a nominal profit.

Out of season

Similar hints have been offered by Alpharetta, Ga.-based networking product manufacturer Digital Communications Associates, Inc. (DCA), which said last Tues-day that a seasonal slowdown may result in first-quarter earnings being lower than the \$11.3 million reported in the quarter ended June 30. DCA issued a statement Wednesday saying the slowdown primarily affected DCA's flagship Irma, 10-Net and Crosstalk product lines - not all of its products. DCA expects sequential quarterly revenue to decline 15% to 20%.

Get 'em while they're hot

Synoptics Communications, Inc., a vendor of Ethernet net-works, commenced its initial public stock offering (IPO) of 1.5 million shares at \$13.50 per share. Of the total, one million were offered by the company, and 500,000 were offered by the selling security holders. The IPO is underwritten by Morgan Stanley & Co. and Hambrecht & Quist, Inc.

Proceeds from the sale of the company's shares will be used pri-marily to finance expected increases in accounts receivable and inventories.

Acquiring disaster

Comdisco, Inc. subsidiary Com-disco Disaster Recovery Services, Inc. has agreed in principle to acquire Toronto-based Computer Recovery Facility, the largest disaster recovery services provider in Canada. The purchase price has been set at approximately \$33 million Canadian dollars.

Shopping spree

Hewlett-Packard Co. has pur-chased 5% of Octel Communications Corp., a Milpitas, Calif.based maker of voice processing systems, for \$13.8 million. The move is the first part of a deal that was signed last month, under which HP will acquire a 10% equity interest in Octel during the next 18 months



TI's OmniLaser 2115. The network printer you need when your application needs are demanding.

The high-speed laser printer for shared-resource environments that can handle many people performing many tasks.

TI's OmniLaser 2115 printer provides the flexibility you need in multi-application environments. Especially where you have several different hardware systems attached to a network.

Built-in emulations mean ar OmniLaser can satisfy the needs of vir-tually any application. It can produce desktop publishing output using the Adobe PostScript* page description language. It can emulate a dot-matrix printer for spreadsheets and draft text. Or an HP LaserJet' for word processing and business graphics. Even a plotter for

advanced graphics.

Best of all, with speeds of up to 15 pages per minute and a duty cycle of 25,000 pages per month, it can satisfy the needs of even the busiest group of professionals.

You can connect an OmniLaser to virtually any computer or network. It features multiple standard interfaces for IBM*, DEC*, Apple*, even specialized hardware like CAD/CAM workstations.

Trouble-free paper handling.

The OmniLaser 2115 prints beautifully on a variety of paper stocks and sizes. Its two 250-sheet paper trays let you load stationery, letter- or legal-size paper, and select the size you need through its easy to-use front control panel.

The right printers for right now, and in

the future. With the OmniLaser 2115, you have the flexibility you need for today's sophisticated printing applications. You also have the confidence of knowing that your OmniLaser offers a safe path to the applications of the future.

The OmniLaser family also includes the 2106 workstation printer and the 2108 small-cluster printer. So whatever the demand of your application, there's multipurpose OmniLaser that's right

To find out more, call Texas Instruments toll-free 1-800-527-3500.





"It's time for a change."

Jerry W. Bennett • President • Bennett Software, Inc.



PHONE: 1-800-562-8722 US 1-800-448-3336 CANADA 1-713-451-8832 FAX

August 15th, 1988.

To : All Clients and Prospective Clients.

From: J. W. Bennett

Subj: Maintenance charges, all Bennett products.

First, let me thank each of our current customers and soon-to-be customers for making Bennett Software such a startling success. In the 12 months beginning May 1st, 1987, our JOBTRAC control system captured an amazing 10% of new business for MVS job scheduling software in the U.S.. Funded only by a dedication to service and customer satisfaction, we surpassed the \$1 million mark within our first year and are looking toward a \$4 million second year.

We didn't acquire this success, we developed it. We develop every product we sell. We owe our success to the customers that chose us, not those who chose one of our acquired competitors.

It's time to break from tradition once again.

The MIS executives that I speak with every day are in agreement on one basic issue: The rising cost of yearly vendor software maintenance is becoming a genuine concern.

In the past, most software cost justifications focused on base prices and largely ignored the yearly maintenance costs. Vendors know this and exploit the issue. Some vendors impart 20% fees, or more. The more unscrupulous vendors will set base license prices at double what the product's are worth, then cut a discount deal off the list price by 50% to 75%. This assures them of a fat maintenance check every year, based on the <u>nondiscounted</u> list price.

Honest vendors require maintenance to pay for enhancements and developments that are due the customer, and keep the customer's investment abreast with the latest technologies. In theory, "maintenance" should not be used as a high profit "wrench" to use against customers. Recent maintenance increases, across the market, are causing major concerns in most data centers, especially when many of these products haven't been enhanced in years.

In an effort to force moderation from our competitors and give our clients relief, Bennett Software is announcing a reduction in yearly maintenance fees from 15% to 12%, retroactive to January, 1988. All customers paying in excess of 12% during 1988, will be reimbursed. This maintenance level will be frozen for 18 months, or until March 1st 1990. Base initial license fees, for all current and newly developed products, will be fixed, for the same period. We will continue our practice of providing site licenses, rather than CPU licenses, throughout.

It's time for a change.

Sincerely,

J.W. Bennett

HOME OFFICE: P.O. BOX 96694 HOUSTON, TX 77213 (713) 451-0191

ATLANTA: 24 HIGHWAY 213 COVINGTON, GA 30209 (404) 786-1686 WASHINGTON, DC: 8150 LEESBURG PIKE, #1252 VIENNA, VA 22180 (703) 448-6808

CA, Unisys negotiate pact

Computer Associates International, Inc. and Unisys Corp. will jointly market Computer Associates software running on Unisys CPUs, the two companies announced late last month.

The agreement is similar to pacts that Computer Associates holds with other hardware vendors, including Digital Equipment Corp. and Data General Corp., according to CA Chairman Charles B. Wang.

The agreement covers mostly applications software, including Computer Associates' Masterpiece financial management programs, CA-Disspla graphics packages and data center resource management, according to both corporations involved.

Computer Associates will license the products directly to Unisys users, and Unisys will have the right to license CA products directly to its own customers in such cases as bid-specific single-vendor requirements of customers, according to both companies.

Software running on the Unisys hardware systems accounts for approximately \$3 million to \$4 million of CA's overall revenue of about \$700 million, Wang add-

Nan G. Lower has joined Ernst & Whinney, the international accounting and consulting firm, as principal and national director of financial services industries consulting.

In the new position, Lower will develop strategies for Ernst & Whinney's financial industries services, products and marketing. She will also be responsible for the development of structures to support information systems, finance and cost management and operations and productivity consulting. Lower joins Ernst & Whinney from IBM, where she was director of product support in the Communication Products Division.

EMC Corp. has hired Michael Ruettgers as executive vice-president of operations and customer service. He will report to Roger Marino, a cofounder of EMC and its president and chief operating officer.

Prior to joining the company, Ruettgers served as COO of Technology Financial Services, a marketing consulting firm. In addition, Ruettgers managed Raytheon Computer Services' third-party maintenance organization for 13 years and served as senior vice-president for Keane, Inc.

General Automation, Inc. Director Alexander W. Giles Jr. was recently elected chairman of the company. General Automation Director Michael J. O'Donnell was elected president and CEO. Current GA Chairman, President and CEO Leonard Mackenzie, who joined the firm in April 1980, was elected vice-chairman of the company and will concentrate his efforts on its worldwide marketing, sales and new business opportunities.

Donald W.S. Rutherford has returned to the company to resume his for-mer positions as vice-president/finance and chief financial officer.

Dell Computer Corp. named G. Glenn Henry to the new position of vice-president of research and development.

Henry will have responsibility for the design of new computer products. He worked for IBM for the past 21 years, including 19 years in management positions. His last position at IBM was systems manager of the Enterprise Systems Division, advanced technology systems.

Bijn announced that its board of directors will have representation from both Intel Corp. and Siemens AG and will include Joseph J. Kroger, Biin president and

Named as chairman of the Biin board of directors was Leslie L. Vadasz, senior vice-president and general manager of Intel's systems business

A member of Intel's board of directors, Vadasz was elected senior vice-president of Intel in 1979.

Named to the Biin board from Siemens vere Carl-Heiner Thomas, Horst Langer, Siegfried Waller and Hartwig Rogge.

Duane Shull, senior vice-president at GE Fanuc Automation North America, Inc. in Charlottesville, Va., retired last week after a 41-year career with the firm.

In his latest position, Shull has been responsible for designing, marketing and installing automation systems for GE

Plus Development Corp., a wholly owned subsidiary of Quantum Corp., named Jeffrey Heimbuck president.

Previously a venture capital partner with Montgomery Securities in San Francisco, Heimbuck succeeds Stephen M. Berkley, who became Quantum's chairman and CEO in 1987.

Irvin Krause has been named managing partner of Coopers & Lybrand's new Center for Manufacturing Technology.

Prior to joining Coopers & Lybrand in 1985, Krause was the technical director of computer integrated manufacturing at Arthur D. Little, Inc.

Joseph H. Kelley CEO "SHOWBOAT" Hotel & Casino Las Vegas



"I have too much money on the line to gamble on dirty

Sophisticated electronics is everywhere today. The fabulous Showboat Hotel & Casino is no exception. Slot machines, poker, keno games, and of course data processing for the facilities employ solid state electronics. When any of these fail, it can cost plenty.

In a business that runs 24-hours a day, the power must be reliable.

The engineers at the Showboat decided to run their systems on electrical power that has been filtered by the POWER SIFTOR* from Current

The hology.

The paying customers at Joe Kelley's Showboat have very little patience with a machine that is down and malfunctioning. That's why Kelley leaves nothing to chance. You shouldn't either.

Unfiltered power can destroy your computer, communications equipment, processing equipment, or other solid state equipment. It can wreak havoc by causing lost files and directories, software bugs, master checks, and system retries. The Power Siftor can typically eliminate these effects of "dirty power" and further increase hardware reliability.

Now, the odds of you making the right choice have been further improved by Underwriters Laboratories. The Current Technology products have received outstanding marks in Underwriters new

category 1449 testing program.

Joe Kelley is right. There is too much money on the line to gamble with erratic power. Protect your systems today. Call or write Current Technology for more information.

The Power Siftor works, you can bet on it.

The Power to Succeed





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Seagate flounders

CONTINUED FROM PAGE 83

"Nobody got any of IBM's business for 3½-in, disk drives in the first year and a half" since the PS/2 was announced, conceded Al Shugart, Seagate's chairman and chief executive officer. Instead, IBM used drives produced at its plant in Fujisawa, Japan.

Peripheral proficiency

Shugart insisted that IBM has made disk drives during its "whole corporate history." Digital Equipment Corp., which also has a disk drive development program, and HP continue to be good Seagate customers, Shugart maintained.

What Shugart prefers not to acknowledge is that systems companies are becoming more proficient at making their own peripherals. While IBM has made disk drives since the start, it rarely used those drives in its low-end systems. In the past, buying from a manufacturer like Seagate proved a better value than using an internally produced disk drive.

While it is likely that IBM would prefer to lessen its dependence on outside suppliers, the price-sensitive nature of the personal computer market dictates that it

take the better deal.

Seagate did land some IBM business as a backup supplier to IBM for 5¼-in. rigid drives for the PS/2. However, IBM has been able to meet much of its own demand with its disk drive plant in Rochester, Minn.

"It's a fundamental problem," said David Vellante, director of storage research at International Data Corp. "IBM, DEC and HP are getting much better at making disk drives."

A slowdown in sales is a problem that becomes magnified at a company the size of Seagate. The disk drive maker's ability to produce in volume, which has allowed it to manufacture at a lower cost than its competitors, becomes a liability when demand for drives falls off.

Company cutbacks

In response, Seagate has reduced the work force at its domestic factory, although so far, no layoffs are scheduled for its Singapore production plant.

"Seagate is a tough-minded company. They'll do what they have to to bring costs in line," said Robert Katzive, vice-president at market research firm Disk/Trend. "This time around, they may find it harder to stay profitable. It's harder to get a destroyer to turn on a dime than a tugboat."

Seagate must adjust to another change in the market for OEM disk drives. In the early days of the industry, disk drive manufacturers were like bandits toting cheap drives to steal business from one another. Burned by past misalliances, system vendors prefer long-term relationships with their vendors.

CHOL FORGOTO

Vendor loyalty
"Once a customer has gone to the trouble
of evaluating a vendor, they like to stick
with it because they've got a lot of money
invested in testing that product," Shugart
explained.

That trend could hurt Seagate in the burgeoning market for 3½-in. disk drives. Seagate's 3½-in. drives were later to market than those of its competitors and later than Shugart himself would have liked. Already, Conner Peripherals has

landed Compaq Computer Corp.'s business, and Compaq has also invested in Conner. Miniscribe Corp. has been selected to supply Apple Computer, Inc. with 3½-in. hard drives. And IBM is not expected to seek an outside supplier.

Complicating Seagate's problems in the market for OEM disk drives are the changing conditions in the aftermarket disk drives sold through value-added resellers and distributors. To bolster OEM sales, Seagate set out to conquer that market during the last couple of years and has become the dominant supplier in that channel. About half of Seagate's business has come from aftermarket sales, but most new PCs from major systems manufacturers come from the factory equipped with a hard drive.

Swapping
CONTINUED FROM PAGE 83

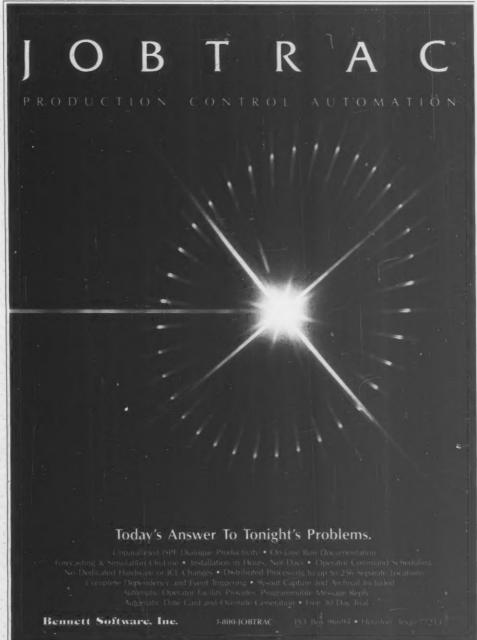
In turn, the software companies supply Sequent with presales trainers and postsales support personnel.

This physical cooperation, like that which the industry is beginning to develop in benchmarking and other areas, is driven by increasing standardization. Except for Apple, all the hardware companies involved use Unix operating systems, and Apple's agreement with RTI involves using its Unix-like operating system, AUX.

Getting products to users faster and running them more efficiently are the two major advantages to this cooperation. While vendors said there will not be any disadvantages, the obvious soft spot is whether it will put users of other hardware at an efficiency disadvantage.

There are design goals on such development so that changes to the software code do not limit the ability for that software to run on other machines. But that is a goal, not a contract, said Stephen Hill, director of product marketing at Oracle.

Still, the software vendors plan on expanding the increased portability to other hardware of the same ilk. For instance, after RTI and Sun finish developing another layer of windowing software so the same windows on a Sun machine will interface with RTI's Ingres relational database, RTI will use the knowledge to do the same for Apple, Hewlett-Packard Co. and Digital Equipment Corp. computers.



COMPUTERWORLD EXTRA TAKES YOU TO THE FRONT LINES OF THE DEC - IBM BATTLE ON OCTOBER 19.

In recent years, Digital Equipment Corporation (DEC) began turning up the heat and giving IBM a run for its money. Now there's a real battle shaping up for the immediate future — and the upcoming decade.

On October 19, Computerworld Extra, a special publication from Computerworld, takes you inside DEC for a close examination of what brought Digital this far, and what it will take to continue a successful challenge into the 1990s.

Computerworld Extra on DEC will zero in on:

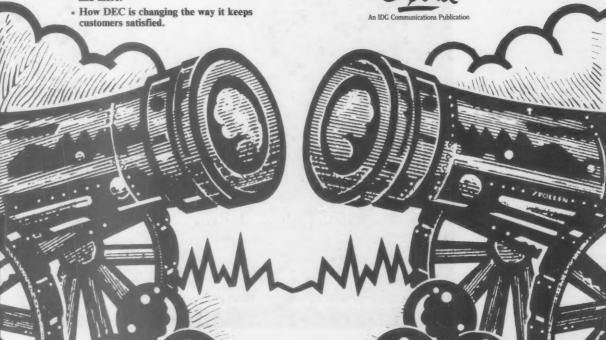
- How users stand to be the biggest winners by getting the best deals — as a result of the rivalry.
- How DEC must change according to Ken Olsen. In an exclusive interview, Digital's president outlines his thoughts on what it will take to successfuly challenge IBM — and win.
- How the company will deal with unanswered questions about PCs, network management and more.

You get a wrap-up of DEC products introduced in the last 12 months — plus an insight into the company's stance on emerging technologies like CASE, RISC, artificial intelligence, optical computing, voice technology and more.

This Computerworld Extra on DEC provides important information for computer professionals currently using DEC equipment — as well as those considering DEC information systems purchases for the future.

And if you market DEC or DEC-compatible products or services, your advertising message should be in this *Computerworld Extra* on DEC. Closing date is September 16, so reserve your space today — and give your advertising message some front-line action on October 19! Call Val Landi, Vice President/Associate Publisher, or your Computerworld sales representative to reserve your space.

COMPLITERWORLD



Zachmann

FROM PAGE 83

cally run on expensive mainframe systems in the past can be much more economically and adequately met with inexpensive, microprocessor-based components. While the result is more demand for PC workstations, local-area networks and servers, it is also declining demand for more expensive large systems. As downsizing leads increasingly to the substitution of inexpensive micro equipment for more costly mainframe or mini systems, overall industry revenue growth will slow and may decline.

The result is that the computer industry may face a period of retrenchment and slower overall growth, even if the economy stays strong. If the economy starts heading for a recession as well, the impact will be greater.

Since the late 1970s, the fortunes of the computer industry have moved independently of the economy. The recessionary dips in 1981 and 1983 coincided with periods of strong growth in PCs and healthy growth for the industry. On the other hand, the industry slump in 1985 was accompanied by a healthy economy, as were IBM's troubles in 1985 to 1987.

This time, however, it looks like the industry and the economy may hit the skids at the same time, resulting in a downturn that is longer and more severe than any we have seen for some time.

Recessions provide an important cor-

rective to excesses and inefficiencies in the economy, just as mild forest fires clear away the underbrush and renew the forest. But preventing forest fires leads to excessive growth in the underbrush and starts to damage even the largest trees. The result is that when a fire starts, it is more severe and more devastating.

Huge fiscal deficits and historically aberrational monetary growth have been used during the past seven years to prent recession. The result is a lot of flammable underbrush in the economy.

The dramatic economies of small scale that microprocessor technology has made possible are generating sparks that the tinderbox character of the economy can readily fan into dangerous flames in the computer industry.

For users, however, the news is not all bad. Slackening demand is also likely to bring with it lower prices and greater availability. The shortage of memory chips and the higher prices will become history once the slump is under way.

Prices of high-capacity Winchester disk drives and of Intel 80386 micro-processor-based systems are likely to decline. That will go a long way toward making systems with enough power, memory and storage to handle OS/2 and Unix affordable. That may also provide the key to a renewed surge of demand to lead the industry back into a period of renewed growth down the road.

Zachmann is a senior vice-president at International Data Corp.

Olivetti

FROM PAGE 83

Currently, IBM, Digital Equipment Corp. and the country's top local manufacturers tend to top businesses' short lists, according to Michael Millikin of The Seybold Group.

Olivetti came out last year with the first phase of its Open Systems Architecture (OSA), a comprehensive minicomputer, microcomputer and networking platform that will spearhead the vendor's effort to become what Millikin calls a full-range systems supplier. Hoping to leverage the increasing demand for standards-based systems both in Europe and the U.S., Olivetti incorporated the Unix operating system, as well as major networking standards such as the CCITT 802.3 and X.25, into the OSA platform, Hansen said.

The keystone of OSA is the Unixbased LSX minicomputer line, which will gradually replace Olivetti's current proprietary minis and, according to Millikin, compete with AT&T's Unix-based 3B line, which Olivetti distributes in Europe.

Not the same audience

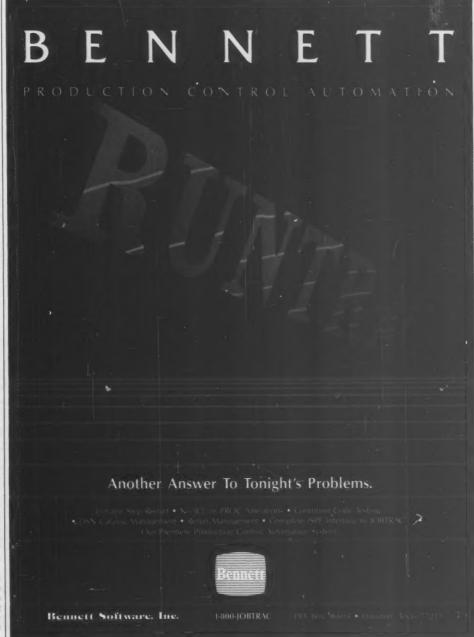
While admitting that the LSX looks like a 3B competitor, Hansen insisted that the two minicomputer lines target different markets. Olivetti will sell LSX directly to the European banking industry, while AT&T aims the 3B at broader commercial and engineering markets, he said.

AT&T has indicated that it may take direct control of foreign operations, which might affect Olivetti's current position as European distributor of AT&T's 3B line. Allen also said that Olivetti might stop distributing 3B lines. But Olivetti denies that the LSX represents a response to that possibility.

However, the future of the AT&T-Olivetti relationship is obscured by a number of recent developments, Millikin said. For example, AT&T agreed in January to purchase a 20% stake in engineering workstation vendor Sun Microsystems, Inc., which also has an alliance with Olivetti.

AT&T Chairman Robert Allen stated in May that the company might stop buying PCs from Olivetti and go to another source. But Allen emphasized that AT&T had no plans to increase or decrease its 22% stake in Olivetti.

Meanwhile, Olivetti's business with AT&T has completely recovered from the 1987 down cycle. The 1987 dip was primarily due to AT&T's overordering the previous year and the fact that Olivetti had just completely refurbished the PC line, Olivetti said.



COMPUTER CAREERS

Now it's temporary managers

Providers, others disagree whether this is something new under the sun

BY DAVID A. LUDLUM



MIS managers left without a job because of corporate America's restructuring

might find they can put their skills to work with the help of some recently launched companies offering temporary manager services.

A number of organizations are placing experienced MIS managers and other executives in part-time or full-time positions that might last from a few days to a year. Some of their tasks are project-oriented, such as the installation of a system, while others deal with management transitions

Opinions differ over whether the services - and the claims about them - reflect a new concept or are a repackaging of the traditional independent consul-

Interim Management Co. in New York, launched in April, has placed one senior manager in a temporary MIS position and is working on three similar arrangements, according to Marshall Jeanes, Interim's vicechairman.

In one case, an investment fund needed a manager to mastermind the installation of a new accounting system, Jeanes says. The job required someone who knew the securities industry and accounting procedures for limited partnerships.

Clients are often mid-size firms that "recognize a problem and don't have anyone to solve it." leanes notes. Corporate cost controls also create demand as companies face increased work loads with smaller staffs, he says.

Cost control

Jeanes says that a temporary manager is less expensive than a team of consultants or a permanent employee and might be more experienced than someone promoted to handle an assign-

Interim enters into contracts with its temporary managers and client companies. It charges the companies a markup for its services, says James Northrup, the firm's managing director. He declined to say how much the markup might be.

Some of the temporary managers have taken early retirement, perhaps from IBM, or lost jobs in a restructuring. Others chose to do independent work but want help with placement.

Other firms offering temporary managers also differentiate the services from those of consultants. "We say we're not consultants because we're putting in hands-on people," says John Naftzger, president of Management Assistance Group in West Hartford, Conn., which acts as a broker of temporary managers.

'We differ from a consultant in that we go in to do the work, not to write a report," says Dan taken some turns and grown because people consider it less expensive to hire temporary," Schooler says. "The industry has branched out; to the extent a company is in a transition or expanding their DP department, sometimes they will hire a temporary manager.

Herb Halbrecht, a Stamford, Conn., executive recruiter, says temporary managers appear to be independent consultants and talk of them is "all hyperbole at this time.'

T'S A nice balance — being a Cub Scout den mother and having the fun and excitement of going into the Financial District and solving problems."

> MARSHA LEROY TEMPORARY MANAGER

Baxter, a partner with Corporate Staff, Inc., a 5-year-old San Francisco firm where about 10% of placements involve information systems work.

But Corporate Staff President William Crandall emphasizes that the workers provide support and coordination for project-oriented tasks and tend not to handle managerial duties such as hiring and firing.

Janice Schooler, founder of Micro Search, a San Francisco firm that places temporary workers, views the temporary manager phenomenon as an evolutionary development.

"The temporary industry has

Halbrecht says the contract managers can be appropriate for clearly defined, noncritical, technology-oriented projects with a definite timetable. He is skeptical about relying on them for heavy contact with users, senior managers or customers or when grasp of corporate culture is required.

"I feel kind of funny about people coming in at management levels for very short periods of time, kind of like hiring contract soldiers," he says. "Think of how long it takes to learn what's going on in the company."

Corporate Staff's temporary managers tend to prefer the lifestyle of an independent contractor and include retirees, mothers who want to work part time and "people who don't have to work but enjoy it," Baxter says.

Some are on call with a client perhaps a company that doesn't have enough work for a full-time manager -- ready to do evaluations and similar chores.

The good life Marsha LeRoy is a financial manager and single parent who has installed accounting and inventory control systems as a Corporate Staff contractor. She says the work gives her an ideal lifestyle, letting her care for her child, earn a good living and face varied challenges and work environments. "It gets really boring if you work for the same company year after year and solved the problems and just do day-to-day managing," she says. "It's a nice balance — being a Cub Scout den mother and having the fun and excitement of going into the Financial District and solving problems.

One advantage of temporary work, especially for people between permanent jobs, is the opportunity to size up a prospective employer, Schooler says. 'It's a wonderful way to get a feel for a company. An interview process is so superficial."

About 20% of the managers placed by Interim stay on the job permanently, according Jeanes.

Ludlum is a Computerworld senior writer.





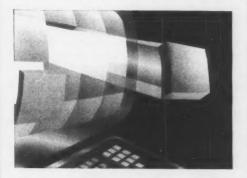
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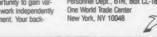
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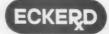
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Try to avoid booting up a lemon

Industry experts advise careful scrutiny of used equipment dealers

BY SUZANNE WEIXEL

You need an IBM Personal Computer AT, but you can't find a new one anywhere. Or you need to add equipment to a system that was installed at the dawn of time. Or you just want to save a little cash.

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There are three basic steps a computer user can take in assessing used equipment dealers, and they are not steps peculiar to the computer industry, according to Thomas I. Donovan, director of Leasing Planning Services at IDC Financial Services Corp. in Framingham, Mass.

Ensure trustworthiness. "Check the company's financial history," Donovan says. "Get the names of some references and call them." He suggests that for major-volume purchases, it might be worthwhile to get a report on the company from a financial research firm such as Dun & Bradstreet Corp. or Standard & Poor's Corp.

William M. Foley, president of the Customer Satisfaction Research Institute in Lenexa, Kan... advises used equipment shoppers to investigate how many years the dealer has been in busi ness. "Have they demonstrated an ability to stay in business?" Foley asks. "You want to know that they'll be around in six months."

Some dealers are linked with national groups like the Computer Dealers and Lessors Association (CDLA), the DEC Dealers Association and the Association of Better Computer Dealers. Among other activities, these groups attempt to police their members' business dealings.

According to a CDLA spokes man, members of the association are bound by a code of ethics that calls for them to honor all agreements, whether written or verbal, and indicate the exact conditions and terms of a deal to all potential buyers.

Complaints can be filed with the CDLA against its members by anyone who believes a member has violated the code of ethics. The association's Industry Practices Committee meets

ly," he says.

Alexander Randall, president of the Boston Computer Exchange Corp., says buyers should be able to tell dealers exactly what they are looking for and know its value.

2. Get what you bargain for. Assuring that a dealer is reliable and his prices reasonable is not the end of the road. "Go in with your eyes open," Randall advises. Taking a good look at the equipment itself can tell you until the thing is up and run-

For a \$25 fee, along with its commission, the Boston Computer Exchange places money collected from a buyer in escrow for at least 48 hours so the buyer can ensure that his equipment is working correctly. "If you don't test it, you can't complain later," Randall says.

3. Assure future needs. You also want to guarantee that a system can be maintained. There are several methods of doing so.

Donovan advises that used equipment buyers check with the manufacturer to see whether it still authorizes the equipment for service. Different manufacturers offer different service policies [CW, Aug. 8].

At the very least, Foley says, be sure that third-party support is available locally. Used equipment dealers often offer service as an option [CW, Aug. 22].

Finally, stick to your guns, Randall says. Most used computer dealers are entrepreneurial as well as knowledgeable, so having determined exactly what you are looking for, "don't let someone sell you something you don't want," he says.

Weixel is a free-lance writer based in Framingham, Mass.

Caveat emptor

Experts suggest shopping carefully for used computer equipment

Before you buy:

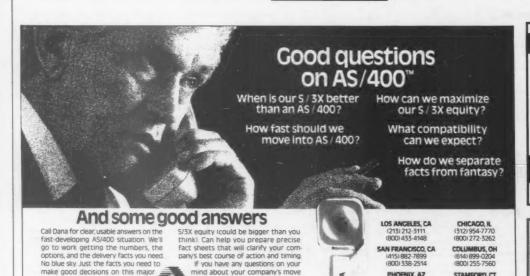
- Check the dealer's financial history
- Inquire about the dealer's reputation among customers
- Ask about the dealer's trade association membership
- Know exactly what you need and its value
- Inspect and test equipment before making a commitment

quarterly to review, amend and enforce the code. Violators are subject to expulsion or other disciplinary action. The DEC Dealers Association and the Association of Better Computer Dealers have similar codes of ethics.

Foley also suggests that a customer do basic research. "If you know how much the equipment should cost, you know if the dealer is representing it faira lot about the person selling it, he says. If the cables and manuals are missing, ask why. Check for external damage, especially damage that could have been caused by smoke or fire.

IDC's Donovan urges buyers to be certain that their equipment is operational before committing any funds. Negotiate a very specific contract, he says, and "whatever you do, don't pay

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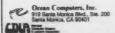
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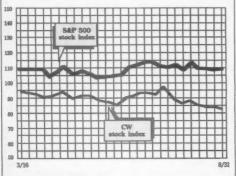
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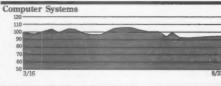
SEPTEMBER 5, 1988

STOCK TRADING INDEX



Indexes	Last Week	This Week
Communications	96.2	95.9
Computer Systems	95.0	96.2
Software & DP Services	96.6	97.0
Semiconductors	60.7	59.4
Peripherals & Subsystems	78.6	76.9
Leasing Companies	106.3	107.1
Composite Index	84.1	83.8
S&P 500 Index	110.0	110.2





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Computerworld Stock Trading Summary

	CLOSING PRICES W	EDNE	SDAY, A	UGUST 31, 1	988		00	SUNGARD DATA SYS SYSTEMATICS INC
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Q	ALTOS COMPUTER SYS	15	9	8.88	-0.3	-2.7	
4	AMDAHL CORP	56	19	40.00	-4.3	-9.6	
ū	APOLLO COMPUTER INC	23	9	8.88	-0.4	-4.1	
Q	APPLE COMPUTER INC	60	28	39.88	-0.9	-2.1	
	BOLT BERANEK & NEWMAN	25	12	16.13	0.1	0.8	
QX	BRITTON LEE INC	4	1	2.44	0.1	2.7	
	COMPAQ COMPUTER CORP	79	34	52.25	-2.3	-4.1	
Q	COMPUTER AUTOMATION INC	16	4	6.63	1.0	17.8	
A	COMPUTER CONSOLES INC	9	2	8.00	0.0	0.0	i.
Q	CONCURRENT COMP CORP	23	11	19.38	0.0	0.0	ď
N	CONTROL DATA CORP DEL	38	18	22.00	0.9	4.1	
Q.	CONVERGENT TECH	8	3	6.19	0.1	2.1	ш
Q	CONVEX COMPUTER CORP	15	6	7.00	-0.4	-5.1	В
N	CRAY RESHING	115	47	78.88	-1.6	-2.0	
ZOZOGZOZO	DAISY SYS CORP	12	5	8.88	0.0	0.0	
N	CRAY RESH INC DAISY SYS CORP DATA GEN CORP DATAPOINT CORP	9	16	18.00	0.6	3.6	
N N N N	DIGITAL EQUIP CORP	200	92	4.75 92.88	-1.6	0.0	
N	FLOATING POINT SYS INC	10	3	3.25	0.1	4.0	
N	COULDING	34	8	22.50	7.3	47.5	
DE .	HARRIS CORP	41	22	27.00	0.8	2.9	
M	HEWLETT PACKARD CD	74	36	46.50	0.8	1.6	
N	HONEYWELLING	85	49	58.75	-1.9	-3.1	
N		169	102	111.50	-1.3	-1.1	
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×	IPL SYS INC	3	1	2.13	-0.1	-5.6	
QQQ	MASS COMPUTER CORP	14	A	4.63	-0.1	-2.6	
ñ	MATSUSHITA ELEC INDL LTD		103	187.50	-15.9	-7.8	н
ö	MEGADATA CORP	6	2	2.25	-0.1	-2.7	Ш
200	MENTOR GRAPHICS CORP	39	14	27.75	0.3	0.9	ш
Ñ	NBLINC	12	3	3.38	-0.3	-6.9	ш
N	NCR CORP	87	50	55.38	1.0	1.8	ш
N	PRIME COMPUTER INC	29	12	12.38	0.0	0.0	ш
0	PYRAMID TECHNOLOGY	16	5	11.50	0.3	2.2	П
rĝ.	STRATUS COMPUTER	35	15	23.88	1.1	4.9	н
000000	SUN MICROSYSTEM INC	44	14	38.63	0.9	2.3	
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Belabor day

Issues continue to drag, while walls close in on DCA, Amdahl

Wall Street slouched toward the holiday weekend in a mixed market that saw several computer issues take major tumbles last week. Digital Communications Associates, Inc. (DCA) was blindsided by Tuesday's announcement that revenue for its first quarter ending Sept. 30 could be as much as 20% less than the \$63.3 million recorded in its fourth quarter. Issues of the Alpharetta, Ga.-based networking products manufacturer had plunged more than 30% by the end of trading on Thursday, down 8% points from a week earlier to 21½.

DCA was not alone, however, in its losing streak. In other action for the four days of trading, Amdahl Corp. dropped 6¼ points to 38½; Microsoft Corp. was down 2½ points to 48½; IBM fell two points to 110¼; Cray Research, Inc. sank 1½ points to 77½; 3Com Corp. skidded 1½ points to 16½; Digital Equipment Corp. fell ¾ of a point to 92½; and Lotus Development Corp., which posted a 52-week low when it traded at 17 on Thursday, dropped ¾ of a point to 17½. Firms that saw increases included NCR Corp., up 3½ points to 57¼, and Control

Data Corp., up % of a point to 21%.

JAMES DALY

Emphasis on software pays off for Novell

BY JAMES DALY

PROVO, Utah - Novell, Inc.'s stepped-up emphasis on hawking its software continued to bear fiscal fruit last week as the networking products vendor announced healthy revenue and net income gains for its third quarter.

Revenue for the firm was reported at \$73.4 million for the period ended July 30, a 51% increase over the \$48.7 million announced for the comparable quarter in 1987. Net income rose to \$10.8 million, or 39 cents a share, a 104% increase over the \$5.3 million, or 20 cents a share, listed for the same period last year.

The numbers are outstanding and are a clear reflection of not only how well its Netware operating system is selling but of the improvement in gross margin they're getting from a higher content of software sales," said Cecilia Brancato, an analyst and vice-president at the Oppenheimer & Co. research firm in New

Novell said earlier this year it would begin to put more emphasis on its software, but analysts noted that President Raymond Norda's comment last week that the firm's focus will continue to be on software development may indicate that those efforts have been stepped up.

Shipments of software products during the third quarter represented 61% of revenue, compared with 58% during the second quarter and 55% during the third quarter. Some analysts theorized that software sales at Novell may constitute 80% of the firm's revenue by the end of

the next fiscal year.

Intel enhances Above Board

DRAM chip costs may up price of increased memory for PS/2 users

BY ALAN J. RYAN

HILLSBORO. Ore. -- Intel introduced memory boards this week that reportedly give personal computer users hardware multitasking support and users of IBM Micro Channelbased Personal System/2s as much as 8M bytes of expanded memory on a single slot.

Timothy Dowling, Intel's Above Board product manager, said last week that the shortage of dynamic random-access memory (DRAM) chips has not affected Intel's development efforts in the memory products area. However, Dowling added, users may feel a financial pinch when dealers and distributors add additional memory to the Intel cards.

'Our dealer channel isn't having trouble getting DRAMs, but they're still paying high prices for them," Dowling said.

The new Above Board 2 Plus,

which will replace the company's Above Board 2, is scheduled for shipment by Intel in a zero-memory configuration for \$495 and in a 512K-byte version for a price

Expanded memory

The board reportedly can be configured to provide as much as 8M bytes of Lotus/Intel/Microsoft Expanded Memory Specifi-cation (EMS) Version 4.0 or OS/2 memory in a single slot of the IBM PS/2 Models 50, 50Z and 60.

Intel Above Board 2 Plus Product Manager Bob Trexler said the Above Board 2 Plus can be configured to run at zero-wait states on the Model 50Z. The board is completely switchless, the company said.

Dowling said Intel has carefully studied IBM's proprietary Micro Channel Architecture and OS/2 to be certain its Above Board 2 Plus "will be compatible with both in the future."

Also introduced were the Above Board Plus, which will sell for \$795, and Above Board Plus I/O, which costs \$945. Both reportedly offer Lotus/Intel/Mi-crosoft EMS Version 4.0 and OS/2 hardware support for multitasking capability of more than 640K bytes on IBM Personal Computers, PC XTs and ATs, PS/2 Model 30s, Compaq Computer Corp. 386s and compati-

The Above Board Plus I/O also includes one serial and one parallel port.

According to Dowling, the Above Board products will benefit users running such programs as Quarterdeck Office Systems' Desqview 2.2 and Microsoft Corp.'s Windows 286 and Windows 386.

A 6M-byte piggyback memory card option, which is sold con-figured with 2M bytes for \$2,195, is available for both the Above Board Plus and Above Board Plus I/O.

Informix distributed **DBMS** due

MENLO PARK. Calif. might be this summer's horror feature at your local movie theater, but the BLOB scheduled to be featured by Informix Software. Inc. by next summer could be more of a thriller for both the Unix-based software vendor and its users, according to at least one market analyst.

Informix last week announced that it would produce a distributed, object-oriented database management system sometime in the first half of 1989. By "object-oriented," a company spokeswoman said, Informix means a database that will let users store any kind of file for example, a facsimile, a word processing document or a digitized image - through the

support of binary large objects, or BLOBs.

If the technology that emerges matches its promise, the database would be a coup for the company and a boon to users. said Richard Finkelstein, president of Chicago-based market research firm Performance Computing

What BLOBs will do for users, he said, is give them SQL access to text information, graphics and even audio.

'Instead of being limited to a file of ZIP codes, such a database could store a map of the U.S. with ZIP codes included," Finkelstein said. "You can get a lot more information from a map proximity information, for exam ple - than you can from a ZIPcode directory.

As for distributed capacity, Informix is promising support for multisite reads, single-site updates and location transparency. The "two-phase commit" protocol, widely held to signify a genuinely distributed DBMS, will be added in a later release, according to Informix.

Sparcs fly FROM PAGE 1

tech, Inc., a market research firm based in Cambridge, Mass.

As August ended, several events appeared to give a push to the Sparc bandwagon:

. TI joined Sun to announce a long-term licensing and development agreement under which TI's semiconductor division will co-design and manufacture the next generation of Sparc chips, while its computer division will put Sparc to work at the heart of a line of artificial intelligence-enhanced high-end commercial AT&T Unix System V worksta-

• On the same day, TI and Burlingame, Calif.-based Cypress Semiconductor Corp. announced a five-year second-source agreement for Sparc components. A TI spokesman, addressing a group of industry analysts, said to expect the TI Sparc workstations in a couple of years, according to John Hoskins, a senior analyst at New Science Associates. a market research firm based in South Norwalk, Conn.

• Matsushita cast its lot with Sun with the launch of a Sparcbased superworkstation maiden entry by its subsidiary, Longmont, Colo.-based Solbourne, Inc. (formerly known as Solutions Are Everything) due out next year.

Solbourne - which is currently a 70-employee company with more than \$50 million of committed funding from Matsushita - is nearing the homestretch of a research and development period that has been in progress since 1986, said Vice-President of Marketing Mary Coleman.

The start-up, Coleman said, plans an early 1989 product announcement of a RISC-based 64bit, 10 million-plus instructions second superworkstation built on a Matsushita ultralargescale integration version of Sparc.

According to Coleman, Solbourne recently contracted with Sun to license all products necessary for full compatibility with Sun's impending Application Binary Interface, as well as with the Sparc-based Sun-4 series.

Those products include Sparc, the SunOS operating system, a Clanguage compiler, Sunview and X11/News windowing systems and the Network File

While the company intends to leverage the combination of Sun and Matsushita technology to provide superworkstation power at prices less than \$60,000, Coleman said, it also plans to leverage the buildup of third-party software around Sun.

While few denied that last week's round of announcements bolstered Sun's already dominant position in the workstation market - estimated at \$6.3 billion by 1991, according to San Calif.-based Dataquest, Inc. - industry analysts re-

T'S WAY, way too early to predict domination of the RISC market.'

> RUSSELL CRABS GARTNER GROUP

mained sanguine about the prospects of non-Sparc RISC-takers.

"I don't see Sparc taking over the world and making everyone who doesn't have it die," Hoskins said

'It's way, way too early to predict domination of the RISC market," said Russell Crabs, an analyst at Stamford, Conn.based Gartner Group, Inc. Even for Sun, he added, last week's acclaim "is more noise and PR than action at this point. What's meaningful to Sun is when all of these companies start shipping Sparc-based boxes out the door, and that's not happening yet."

Meanwhile, chip manufacturer LSI Logic Corp. added a new wrinkle to the complexion of the workstation race last week by slashing the prices on all its RISC chins. LSI manufactures both Sparc and the Mips Computer Systems chip said to power DEC's coming assault on Sun.

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TRENDS

ASCII/ANSI text terminals

ASCII and ANSI text terminal users will get everything they always wanted in a terminal - and less. Less price, that is,

Shipments of ASCII and ANSI text terminals will increase at a compound annual growth rate of 6.3% during the next five years, but the dollar value of those shipments will drop at a compound annual rate of 3.3%, according to a recent study by International Data Corp. (IDC), a market re-search firm in Framingham,

Last year, the market grew at an annual rate of 14%. IDC predicts this rate will decline to 10% this year and continue to drop in the following years. In 1987, the U.S. installed base of ASCII and ANSI text terminals reached 7.5 million. Shipments during the vear were 1.45 million.

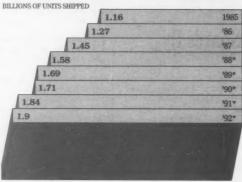
According to IDC, the major forces behind that growth were product replacement cycles encouraged by product introductions, processor shipment increases and stiffer competition from systems houses. Anticipation of Digital Equipment Corp.'s new VT family also fueled growth.

During the next five years, ANSI terminal shipments should grow at a slightly faster rate than ASCII terminals - 6.9%, compared with 6.0% - according to the study.

STANLEY GIBSON



But shipments maintain growth



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Rumor mill runs dry. As if three reorganizations in less than one year weren't enough, industry sages have been mounting a whispering campaign about an upcoming third. Well, the whispering grew loud enough to draw attention in Armonk as well as a point-by-point rebuttal: No top executive is known to be defecting to AT&T; the company's fullemployment policy remains in effect, with plenty of assistance provided to those who are required to move; and Entry Systems Division chief William Lowe, who has not moved through two rounds of executive promotions, continues in his current position.

Nubus to ram into IBM bus? AST Research, which has been trying to scrounge up support for a 32-bit bus alternative to IBM's Micro Channel, appears to have hit upon Nubus, created by Texas Instruments and used successfully by Apple on the Macintosh. The embryonic AST consortium may get its most prominent member yet if rumors are correct. It seems that Micro Channel-buster Compaq may join up later this month. Compaq is apparently also still evaluating extensions to the shopworn PC AT bus. Our source says that regardless of Compaq's decision, we should expect alternative bus machines to arrive early next year.

Two and two add up to . . . Let's take Nubus a step further. TI last week said that two intelligent chips it has developed will cut the development time from months to just days that is required to bring out expansion boards for the Macintosh II "and other Nubus-based computers." The "intelligent chips" - this gets better, so keep reading - will enable individual boards to chat with each other, acting as "traffic cops" for signals being sent and received by the individual boards. Does that sound like a Micro Channel alternative, or what? And what is The Wall Street Journal supposed to do now that its "traffic cop" of operating system functions has been co-opted into firmware?

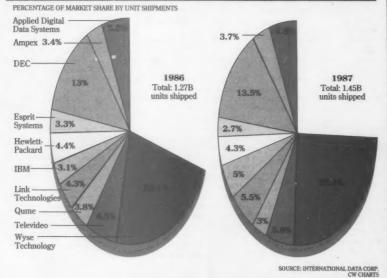
Staying off the water wagon. Not to be left in the dust of Amdahl and IBM's recent announcements of 100-plus-MIPS mainframes, National Advanced Systems will announce its contender Sept. 13. However, it's expected to be less powerful than the competition's fastest machines. Unlike Amdahl, the NAS machine won't be water-cooled, but it will have the option of fiber-optic channels.

Lotus powwow. The Lotus powers that be were at an offsite strategy meeting last week, and the 1-2-3 Release 3.0 situation was apparently at the top of the agenda. The Lotus folks were reportedly figuring out the status of the critical product to determine whether it will ship this year. Lotus CEO Jim Manzi must have been beating the war drum after the roasting he took in the WSJ last Tuesday.

Just ducky? OSF won't be that lucky. After seeing its AIX incorporated as the central component by the Open Software Foundation, you'd think IBM would be willing to let DEC take a pass at the standardized interface that will accompany the grand scheme, right? Wrong, Maynard-breath! Forrester Research claims to know that IBM has cut a deal with Steve Jobs to use an interface owned by his company, Next. Now if Steve's in bed with the OSF ele-phant, while the Macintosh from his past life is cozying up to unlikely OSF cofounder Ken Olsen, one wonders if John Sculley can take time out from his Iacocca-like breast-beating to figure out where Apple stands in all this openness as the interface for the rest of us gets surpassed by the interface for all of us.

Smoke gets in your eyes as the 9370 goes slipping by (bye?). Smoke gets in your eyes as the SATU goes stepping by (bye!). The FUD factor's on overtime these days with the immi-nent mid-month arrival of some kind of 9370 unveiling. There are those who say look for a low-end; others foretell a high-end-oriented ESA. We stuck a wine glass up against the wall in Armonk and heard that it won't be aimed loo, it won't be aimed high, but it will be hardware. Perhaps, some onder, it could be storage devices to distance the line from the AS/400. If you know, think you know or just want to kick up some dust, call the hot line at 800-343-6474 or 508-879-0700 and put News Editor Pete Bartolik on the road to rumination.

Top 10 vendors haven't changed since last year



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